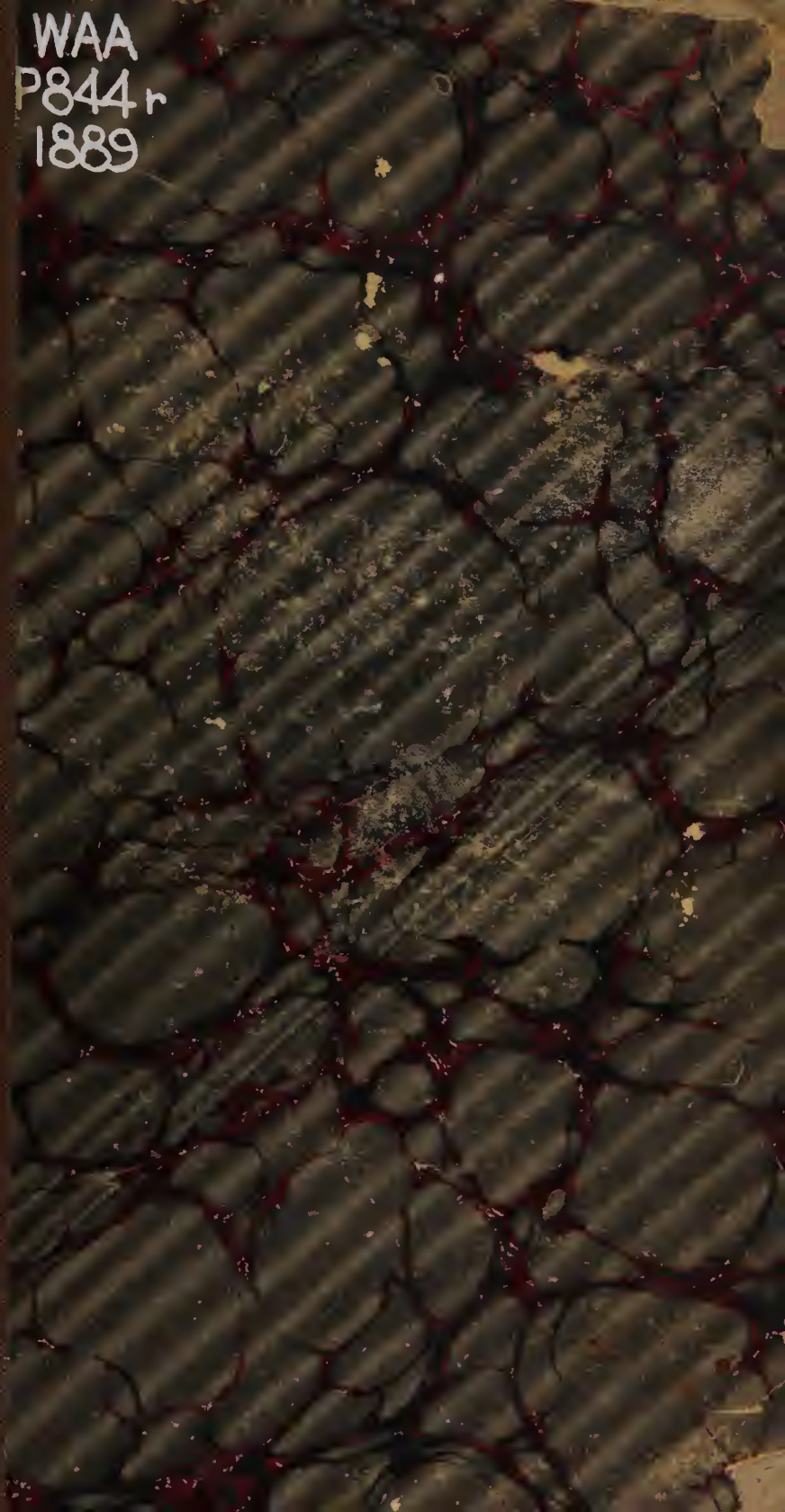


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REPORT

BY

A SANITARY INSPECTION

OF

CERTAIN TENEMENT-HOUSE DISTRICTS
OF BOSTON.

BY

DWIGHT PORTER,

*Professor of Civil Engineering in the Mass. Institute
of Technology.*

BOSTON.

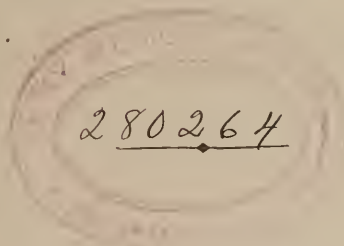
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Miss H. H. Thwing,

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REMARKS BY GENERAL FRANCIS A. WALKER,
AT THE GENERAL CONFERENCE OF
CHARITIES, DEC. 6, 1888.

LADIES AND GENTLEMEN, — Somewhat more than a year ago the association known as the Eighth Ward Conference of the Associated Charities reached the conclusion that it was desirable to undertake, outside of official agencies, an investigation into the sanitary condition of their portion of our city. For this purpose, an executive committee was formed, and means were collected. The committee in charge consulted Prof. Dwight Porter, of the Institute of Technology, regarding the methods most advantageously to be pursued in such an investigation; and at their request Prof. Porter undertook the charge of the work, which began in the summer of 1887. Prof. Porter was assisted by certain students of the Institute.

As the work progressed, it seemed desirable to embrace other districts within the scope of the investigation; and the result of the summer's work constituted a sanitary *reconnaissance* of the worst streets and alleys in the worst districts of Boston, the city over.

While the work was in progress, Prof. Porter, so far as time allowed, sent to the officers of the city Board of Health transcripts from the notes of his assistants. This, however, could not be done to a great extent during the summer, but in the course of the following winter all the information obtained by those engaged in this service was placed at the disposal of the

city officials, who had manifested; from the first, a lively interest in the proposed work, and had given cordial assistance to those undertaking it.

The present meeting has been called for the presentation of Prof. Porter's report of the work done by himself and his assistants, and for the free discussion, by this assembly, of the points of interest involved.

As it seems desirable that such a discussion should be presided over by one who is an authority in regard to matters of public hygiene, Dr. Walcott, the president of the State Board of Health, has been asked, and has kindly consented, to take the chair on this occasion. I shall only detain the audience by three remarks : —

First. While the work of Prof. Porter and his assistants has shown that there is much — very much — in the sanitary condition of Boston which requires to be amended, and which it would be a shame and a crime not to amend, by whatever measures may be required for that purpose, we may yet fairly congratulate ourselves that the state of our city has been shown, by this intelligent and searching investigation, to be better than that of many of the cities of the land.

Second. The investigation, the results of which are to be laid before you this afternoon, appears to me to have an added interest from the fact that it has been the work of a voluntary association, using means collected by private benevolence, and operating without authority of law and altogether outside the established official agencies. In the great debate which is now proceeding on both sides of the Atlantic, in the decision of which is so largely bound up the future of humanity,— the debate, namely, as to the extent to which the powers of Government shall be enlarged to meet the demands of an increasingly complex organization of society,— every successful effort, by individ-

uals voluntarily associated, to perform some part of that work which Government has been called upon to undertake, and which is of such vital consequence to society that it must be undertaken and performed by some agency, — makes a valuable contribution to the political knowledge of the times. The present occasion seems to me to furnish not the least successful among the many instances in which the public spirit of our citizens and the unwearying efforts and unstinted generosity of individuals have availed to do a work for society to which it was once thought only the authority and the resources of Government would be adequate.

Third. The remark with which I shall close may seem directly antagonistic in spirit to my last remark; but I believe it to be so in form only. The vulgar proverb tells of a stitch in time which saves nine; and the sacred proverb tells of that which scattereth yet increaseth, and of that which withholdeth more than is meet, and so tendeth to poverty. I believe that a true view of the economy of State action may not infrequently disclose the occasion for saving a great deal of interference and a great deal of State action, in subsequent stages, by putting the firm hand of government upon the very sources of evil, and applying the powers of the State to crush out social mischief in its inception. I confess that it has for some time seemed to me increasingly probable that the social philosophy of the age would soon come to recognize the Housing of the Very Poor as *the* point at which the remedial action of the Government may be applied, not only with the highest effect upon the happiness and health of the community, but actually with large resulting reductions from the sum of State action and governmental authority.

It would be an act, either of monstrous ignorance or of monstrous impudence on the part of any man, contemplating the

changes of public sentiment which have taken place on this subject within the last fifteen, ten, and five years, to put his foot down and say, "thus far and no farther will I go towards enlarging the functions of the State." In view of the great developments of the immediate past, the most likely thing in regard to each one of us, by turns, is that, in five, ten, or fifteen years from now, he will be occupying a position on this subject very different from that he now anticipates. Yet I confess I have of late been coming rapidly to the conviction that ere long there will be a general consent of conservative citizens, in every enlightened State, to regard as thoroughly good politics all interference by law which may be necessary to prevent any portion of the people from living in houses which are unfit for human habitation, residence in which is incompatible with health or with social or personal decency.

I expect soon to see the time come when the Commonwealth of Massachusetts shall declare that no one of its citizens, under whatever plea of poverty, shall have his home where he has not a sufficient access of fresh air and of God's sunlight, and where the conditions as to drainage and the disposal of refuse are not such as to afford reasonable security for the health of the individual, and to protect society against communicable disease. I believe that not only will the law of the Commonwealth say this, which, indeed, is little more than it now says, but that the public sentiment of the community will have been so educated on this subject as to support the officers of the law in whatever rigorous and painful measures may be required for the thorough, systematic, and unrelenting enforcement of the most advanced sanitary requirements.

REPORT UPON A SANITARY INSPECTION OF CERTAIN TENEMENT-HOUSE DISTRICTS OF BOSTON.

BOSTON, October, 1888.

MESSRS. ELIOT C. CLARKE, ARTHUR B. ELLIS, MRS. J. S.
COPLEY GREENE, MISS MARGARET GREENE, and MISS
ANNE H. THWING, *committee*: —

I have the honor to present herewith the results of certain investigations made at your request, mainly during August and September, 1887, the report upon which has been, I regret to say, unavoidably delayed. An outline of the work to be attempted had previously been prepared by Prof. George F. Swain, whose plan I endeavored to follow in the main, taking the liberty, however, to modify it in some respects. The object sought to be accomplished was to obtain data regarding the sanitary condition of the poorer laboring people of this city, who constitute the population of the tenement-house districts.

In the Statute Law of 1885 a tenement house is defined as one occupied by more than three families, living independently of one another, or by more than two families so living upon any floor above the second. Our work was not confined to houses of this class ; but of a total of about 900 houses specially reported, upward of 300 were strictly tenement houses, as above defined. The time and means at command did not warrant attempting a thorough and elaborate sanitary survey of a large section of the

city. The effort was, therefore, made to visit those houses and localities presenting the worst conditions, and mere completeness of statistical returns was allowed to occupy a minor place.

Work of this general character is not entirely new or novel, but it has usually been carried on under public authority. Even as far back as 1840 we find record of an inquiry by the Poor-Law Commissioners of Great Britain into the sanitary condition of the laboring population in that country, presenting facts which cannot fail to be of the greatest interest to every one whose attention has been called to the social problems of the present time. In various cities of this country more or less complete sanitary surveys, as they are called, have been conducted within the past five or ten years. A noteworthy instance of work of this sort, prosecuted by private enterprise, is that of the thorough and admirable investigation which has been made in the tenth ward of New York, accomplishing results which are familiar to many people of this city. It is only by some such means that the knowledge is to be gained upon which may be based suitable plans for improving the condition of a class of people which, because of ignorance, poverty, and lack of desire for improvement, is certain to do nothing important toward helping itself, and which is, at the same time, a standing menace to the physical and the social welfare of the community as a whole.

The principal feature of the work was intended to be a house-to-house sanitary inspection. In accordance with the wishes of those interested in the enterprise, I selected, for this purpose, as assistants, several undergraduate students of the civil engineering department of the Institute of Technology. They entered upon their duties at different times, the entire work of inspection and reinspection receiving directly the equivalent of perhaps 90 days' time of one man. Their labors were, in many

respects, extremely disagreeable; but I am confident that they were, upon the whole, well and carefully performed. Each inspector was supplied with a simple outfit, including blank forms upon which to make returns. It was his duty to observe the condition of yards and outbuildings, noting whether clean and well-kept or filthy and littered. He had, further, to explore the house itself from cellar to attic, entering all rooms when practicable, measuring the cubic contents of sleeping-rooms, peering under the sinks to see if they were trapped, examining the drainage system wherever accessible, making memoranda of uncleanness or want of repair, and securing such information as might be useful regarding tenants, rent paid, and so forth. Practically no hindrance to inspection, on the part of tenants, was encountered, although occasionally objection was raised by a landlord.

Inspections were made in portions of six different wards, — 6, 7, 8, 9, 12, and 13. The original design was to confine the inquiry to Ward 8, and that ward received first attention. It was later decided to extend operations, so far as time would allow, into the worst portions of other wards, and the North End, the South Cove district, and South Boston were successively visited. Certain streets, or parts of streets, were sufficiently well known to be put down at once for investigation. Others were decided upon on the strength of information gained from various individuals, — city inspectors, persons interested in charitable work, and others. Further, when any new section was to be taken up, a sort of *reconnaissance* was made, assistants being detailed to walk through every street, and decide, so far as possible by a cursory examination, what localities or individual houses merited special inspection. The 910¹ houses

¹ 251 in Ward 6, 221 in Ward 7, 190 in Ward 8, 89 in Ward 9, 50 in Ward 12, 109 in Ward 13.

upon which reports were made contained a population of upward of 12,000 persons, or nearly one-seventh of the entire population of about 89,000 accredited in 1885 to the six wards visited. On maps submitted with this report the position of every house inspected is shown.

Nuisances discovered were reported to the city Board of Health, whose coöperation was at all times most courteously and freely extended. It was endeavored to report the most serious at once; but, in many cases, I desired that there should be a reinspection after an interval and before making complaint. Opportunity was thus given to learn whether insanitary conditions were likely to be discovered and remedied from any other source than our own work, and also to learn whether certain of them were simply accidental and temporary, or habitual and permanent. Reinspections were thus made at intervals ranging from a few days to two or three months. In more than two-thirds of the houses reëxamined the same faulty conditions at first reported were found still to exist, substantially unimproved, even after the lapse of months. In the remainder, either repairs had been made, or the conditions of filth previously observed had disappeared.

Altogether, abstracts were handed to the Board of Health in the cases of some 360 houses, the condition of which appeared unsatisfactory. I am unable to say definitely to what extent these reports have been acted upon. Some of the evils pointed out — as, for example, certain cases of overcrowding — were not so serious that official action upon them was really expected, but the facts concerning them were desired, and were therefore furnished. I am informed by the chairman of the Board that the cases reported have received attention, and that the information furnished has led to numerous decided improvements in the premises concerned.

GENERAL CONDITIONS OF TENEMENT-HOUSE LIFE.

It would, indeed, be surprising if any large city were found not to contain a deplorable amount of misery, and not to present conditions and problems of the most serious nature, affecting both the physical and the social well-being of its citizens. Such conditions and problems are not confined exclusively to any one class of the population, but they are in none more obvious or more pressing than in that composed of the very poor people who fill the tenement houses. Here are to be found persons from every quarter of the globe. Many of them are the very offscourings of the countries whence they came, — poverty-stricken, ignorant, and even vicious. With these, sanitary considerations have no weight, and they seem not to care how they live. Every important city has such people, and Boston shares them with the rest; and yet, considering the size and age of the city, its position as a seaport and landing-place for immigrants, its trying climate and peculiar topography, it seems to me that the sanitary, and perhaps the social, conditions of tenement-house life here are better than might fairly be expected.

The marked impulse toward suburban life must have done much to relieve the tendency to overcrowding of the city proper. The introduction of a comprehensive scheme of main drainage has helped to offset the disadvantages of a low, flat, and artificially made surface, difficult to drain. The movements of population, under which sections of the city once fashionable have been almost entirely deserted by well-to-do families, have furnished to the poorer people houses much more substantially and comfortably built than any constructed designedly as cheap tenement houses would have been. Further, the city has for some fifteen years been under the oversight of

an efficient Board of Health, the good results of whose labors are unquestionable.

The poorer tenants in this city live in apartments of two or three rooms each, for which they pay a weekly rental at a rate ranging usually from 50 cents to \$1 per room. The average total rental paid per week per family among nearly 1,000 families for which we obtained returns was \$1.86.¹

The tenement houses proper contain from four to fifteen families each, no individual houses (separate street numbers) which we visited including more than about fifteen families, or more than sixty or seventy inmates. The class of tenement houses which was examined is about equally in number composed of brick and of wooden buildings, about two-thirds of all containing three principal stories each. There is a considerable number of four-story buildings also, a less number of five-story, and a very small number of tenement houses of six full stories. A small area at the rear of each house serves for ash and garbage receptacles, etc., and either in a small shed or in the cellar or basement of the house are bins for wood and coal. Each of the tenements — except sometimes those on the highest floor — is usually provided with a kitchen sink, or else has a hall sink in common with another tenement. Clothes from washings are hung upon the roof to dry, or else upon lines stretched from the rear of the house. The stairways and halls are very commonly dark and narrow. In the poorer houses few carpeted rooms will be seen, and the furniture is in general scanty and poor. And yet frequent agreeable surprises will be encountered in these houses; and often where one would least expect it, he will come upon apartments very comfortably furnished. Families that are very poor and cramped for space usually have to turn

¹ Under \$1 per week, 36 families; \$1 and upward to \$2, 533 families; \$2 and upward to \$3, 326 families; \$3 and upward to \$4, 83 families; \$4 and upward, 15 families.

every room to account for sleeping, even the kitchen; lounge beds are sometimes used, but often beds are made directly upon the floor.

Many of the houses date back a century or more, and are rich in historical associations. Peculiarities of construction reveal their distant origin, and almost obliterated marks of architectural ornamentation show that they were once more pretentious dwellings. The North End was once the most elegant portion of the city, but is said to have declined soon after the Revolution. Twenty-five years or so ago the West End was a fashionable quarter, but that in turn has been mainly abandoned to a poorer population, and Ward 8 is now the most densely inhabited ward in Boston.

It is interesting to notice how different nationalities have become concentrated in particular localities. Thus the Negroes are found mainly on the west slope of Beacon Hill, in the vicinity of Cambridge street. Nashua, Billerica, and Lowell streets are occupied largely by Irish; Salem and adjacent streets by Jews; while in Salutation street and vicinity will be found settlements of Portuguese, and on Salutation and Endicott streets, and in various other parts of the North End, are colonies almost exclusively of Italians.

Statute laws passed in 1871 with reference to tenement and lodging houses, supplemented by others passed in 1885, contain important provisions regarding the construction, ventilation, lighting, drainage, cleanliness, and overcrowding of such houses. While it was not sought in our work to apply these laws minutely to the houses we examined, the data obtained by inspection will, I trust, serve to show in a general way whether some of the principal results contemplated by the laws are, or are not, being realized.

OVERCROWDING.

One of the most serious evils encountered among the poorer population of a large city is overcrowding, or the occupancy by several families or persons of a space suited to a less number only. The marked modern tendency toward a concentration of life at large centres, the apparent inability or disinclination of the poorest and lowest classes, especially, to free themselves from the fetters of city life, the poverty which is inseparable from the shiftlessness, vice, and misfortunes of these people and which is constantly made more general and intense by the influx of a degraded class of foreigners and the consequent lowering of wages, all act to produce a steadily increasing density of population.

By overcrowding, the spread of the various infectious diseases is vastly facilitated. The foul air of thickly inhabited dwellings assists also, more than any other cause, perhaps, in the development of consumption, that destroyer which stands at the head of all diseases in this city. Nor are the evil effects of overcrowding confined merely to the development and spread of disease of the body; for immorality and other vices quickly spring from the withdrawal of those barriers of reasonable privacy which are essential to decent society, but which are impossible where many people are crowded into small space. The British report, to which I have already alluded, contains pictures of the degradation and depravity toward which undue crowding certainly tends, that cannot be considered without a deep impression being made upon the mind. Very commonly large families were found sleeping in a single damp, filthy, and wretched room of small size, and as many as possible in a single bed; frequently three or four families "occupying the same bedroom, and young men and young women promiscuously sleeping in

the same apartment." Within a few years similar conditions have been brought to public notice in New York city, conditions which are bound to be realized sooner or later in every large city in which the tendency to overcrowding is permitted to go on unchecked.

In our inspections in this city we discovered scarcely any enormities such as appeared in the investigations to which I have just referred, and yet abundant data were obtained as to the existence of extensive and serious overcrowding. This is common enough in all the tenement-house districts of the city, and examples may be found among all nationalities of people, but it appears far the most common and aggravated among the Italians and Polish Jews. It is largely the result of poverty, which does not permit tenants to pay for many or large rooms. Frequently it happens that women are left widows with families of young children, who must economize in every possible way, and to whom no readier means of doing this offers than the taking up with a small rent, even though it involve the sleeping of the entire family in one or two little rooms. In very many cases, however, and this especially among the Italians and Poles, overcrowding appears to be a matter of habit and choice. So far as I can learn, however, it is confined to the occupancy by single families of apartments too small for them, and is not shown in the herding together of several families in common apartments.

Overcrowding may best be gauged by considering the number of occupants and the size of sleeping-rooms, since in those the family is most fully represented for the longest time, and there the evil consequences of breathing impure air will most be felt. It is a difficult matter, however, to fix any exact and general standard by which overcrowding may be properly measured. The danger of a particular case can justly be estimated only by con-

sidering all the circumstances of size and ventilation of rooms, number and condition of health of occupants, and so on. For the purposes of a general inquiry, however, we may assume a certain amount of space as proper for each occupant, and apply this as a test to the conditions actually found to exist. In order that the air of a sleeping-room may be kept reasonably pure and suitable for breathing, it is known that the room should be large enough to furnish each inmate at least 500 or 600 cubic feet of air space, and that, further, it must, even with this allowance, be thoroughly ventilated, so that the air may be frequently changed. An idea of the space thus required may be retained by recollecting that a room eight feet high (the ordinary minimum height) and just large enough to admit two full-sized beds, would contain about 500 cubic feet.

The standard mentioned is a low one for the maintenance of pure air, and in so far as it fails to be realized will the health of the offender suffer. The consequences of the habitual breathing of impure air are so gradually developed, however, and may be so disguised by other causes of ill health, that they are certain not to be properly appreciated, especially by ignorant persons. It is probable, moreover, that there may be, in particular cases, a very considerable departure from the standard mentioned without any harm resulting that should warrant public interference. Nevertheless, when we find an important proportion of the inmates of the tenement houses crowded into sleeping-spaces not one-quarter the size that should be had, and that most persons would insist upon merely for comfort, it is evident that a question has been encountered that demands more than a passing thought.

As examples of overcrowding, I will mention a few cases reported by inspectors: At No. — Friend street is a three-story wooden house, with a fruit store in front on the first floor,

but otherwise given up to tenements, which are reached through two entrances from a side alley. The entire building was occupied by sixteen families, which, including a few lodgers, comprised sixty-six persons, nearly all Italians. The rooms all have one or two windows, but are of small size, and about one-half of all the occupants slept in rooms affording them less than 250 cubic feet each of air space. In two dingy rooms on the first floor was a family of two adults and three children, two of the latter sleeping in a little side room, and the rest of the family occupying the remaining room, or kitchen, a bunk in one corner and a mattress laid upon boxes and boards serving at night. On the third floor a family of two adults and five children all slept in a single dirty, ill-smelling room of 630 cubic feet contents, with one window of $2\frac{1}{2} \times 4\frac{1}{2}$ feet.

At No. — Endicott street, the two upper floors of a dilapidated three-story wooden house were occupied by seven families of Italians, numbering thirty-seven persons, of whom not more than half a dozen had even as much as half the air space in sleeping-rooms that has been stated to be requisite. Two children slept in a dark inner room, just wide enough for a bed, having a door into one room and a small window, 16×24 inches in size, opening near the ceiling into another room. Three adults and two children slept in a room a little larger than would be suitable for one person, dirty and foul-smelling, and the walls alive with bugs. In another room of about the same size were two lodgers and two children.

At No. — North street is a four-story brick building, the first floor front having a bar-room, and the rest of the building given up to Italian tenants, of whom there were nine families, comprising about forty persons. A part of the sleeping-rooms here are of very good size, but nearly all are overcrowded, the place appearing to be a rendezvous for numerous Italian

lodgers, who stay here when not working in the country. The kitchens and the bedrooms proper are about equally employed for sleeping purposes, and many of them contain at times half a dozen occupants each.

These are but a few examples, out of many similar ones which might be cited, of overcrowded houses. The general result of our inquiries, so far as statistics of sleeping-rooms are concerned, are presented in the accompanying table.

STATISTICS OF OVERCROWDED SLEEPING-ROOMS.

Tenement Houses Proper.

Number of houses included in these figures, 203.

Population of these houses, upward of 4,500.

Classification of rooms according to air space per occupant.	Total number of overcrowded rooms reported.	Total number of occupants of rooms.	Total air space of rooms.	Average number of occupants per room.	Average air space per room.	Average air space per occupant.
<i>Cubic Feet.</i>			<i>Cubic Feet.</i>		<i>Cubic Feet.</i>	<i>Cubic Feet.</i>
under 200	194	703	104,355	3.6	538	148
200-299	254	778	181,460	3.1	714	233
300-399	170	415	135,060	2.4	794	325
400-499	151	345	147,560	2.3	977	428
500-599	65	114	59,560	1.7	916	522

All Houses on which Reports were made as to Overcrowding.

Number of houses included in these figures, 432.

Population of these houses, upward of 7,000.

Classification of rooms according to air space per occupant.	Total number of overcrowded rooms reported.	Total number of occupants of rooms.	Total air space of rooms.	Average number of occupants per room.	Average air space per room.	Average air space per occupant.
<i>Cubic Feet.</i>			<i>Cubic Feet.</i>		<i>Cubic Feet.</i>	<i>Cubic Feet.</i>
under 200	327	1,180	175,390	3.6	536	149
200-299	490	1,400	329,870	2.9	673	236
300-399	323	768	252,860	2.4	783	329
400-499	231	510	217,670	2.2	942	427
500-599	119	206	107,010	1.7	899	519



INTERIOR VIEW AT NO. — SALUTATION STREET.

From a flash-light photograph by Mr. Frank A. Ames. — House occupied by Italians. The bed-room shown measures 13 X 17 feet, and is used also as a kitchen.

It is to be remembered that the statistics here presented are not complete; that is to say, not all the rooms in the houses visited were reported, but only those which were accessible at the time, and which appeared to be unduly crowded. Nevertheless, certain important facts are brought to light. It will be observed, for example, that in about 200 selected tenement houses, representing a population of upward of 4,500 persons, about one-half that number were found sleeping in rooms affording them an average of less than 500 cubic feet of space each, and more than 700 persons averaged less than 200 cubic feet each. An inspection of the tables will also discover the twofold manner in which the intensity of overcrowding is displayed, not only in the occupancy of small rooms, but also, coincident with a decrease in the size of the room, an increase in the number of its occupants; thus, the most densely overcrowded class, in the above tables, will be noticed as occupying rooms not much more than half as large as those occupied by the least overcrowded class, and yet it averages twice as many persons to the room.

The wards which we visited in our inspections doubtless comprise the most thickly settled portions of the city of Boston, and it may be interesting to notice for a moment the figures which indicate the actual density of population. If we divide the population of the city in 1885 by the number of acres of surface within its limits, we find the average settlement thus obtained to be about 17 persons to the acre. This result is evidently made very small, though, from including within the area of the city much available land not yet built upon, together with extensive areas devoted to park, railroad, wharf, manufacturing, and business purposes, which, practically, are not available for dwellings. If now we consider the various wards separately, leaving out certain tracts of railroad and

wharf property, we find a population, per acre, in the various wards of Boston proper, ranging from about 43 in Ward 11 to 230 and over in Ward 8. In Wards 6 and 7 the average settlement is about 140 persons per acre. Comparing these figures with those for other cities, we find in Chicago the most densely settled ward averaging 86 persons to the acre. In New York city, Ward 10, to which I have before referred, not so large by a dozen acres as Ward 6 in Boston, has three times as great a population, averaging in 1880 somewhat over 430 persons to the acre.

What this means may be better understood from the statement, which is approximately true, that in the tenth ward of New York the average density of settlement for the entire ward is as great as is found in the most thickly settled district of the North End in Boston.

Further, it may be interesting to state that there are in New York at least eight wards, out of the twenty-four, in each of which the average density of population exceeds the highest average that can fairly be calculated for any ward in this city. The eight wards alluded to comprised, in 1880, a population of 380,000 persons, and constitute in themselves a city somewhat larger than the entire city of Boston.

Any one ward, however, is extensive enough to cover considerable extremes of settlement, and contains more or less surface devoted to other purposes than residence; and it is only by taking smaller areas, such as assessment blocks, that we finally gain a satisfactory notion of the real density of population in particular parts of the city. It now becomes an easy matter in either of Wards 6, 7, 8, or 12 to pick out assessment blocks of from a quarter of an acre to an acre and a half in which, if we exclude street surfaces in calculations, the settlement is found to average 600, 700, and even more than that number of per-

sons per acre. Such figures will be reached in the vicinity of the northern depots, and again near Haymarket square, near the North ferry, and near the Old Colony depot.

The same density of population found even now in the six acres near Haymarket square bounded by the centre lines of Charlestown, Cooper, Salem, and Cross streets, would fill the Common with nearly 20,000 inhabitants; and if it could be extended over the whole area of Boston would furnish a population of 8,000,000 people.

DENSITY OF POPULATION.

CITY AND DISTRICT.	Area in acres.	Popu- lation.	Popu- lation per acre.	REMARKS.
Entire City of Boston	23,085	390,393	16.9	Population by census of 1885. Population as estimated for 1885. See report of Department of Health, 1885. { Figures taken from <i>The City Record</i> . Population for 1880. There are eight wards out of the twenty-four in New York city, in each of which the average density of population exceeds 230 persons to the acre. The total population of these eight wards in 1880 was 380,470.
Entire City of Chicago	22,493	664,631	29.5	
Entire City of New York	24,893	1,189,677	47.8	
<i>Certain Wards.</i>				
Boston, Ward 6	122.8	17,256	140.5	Population by census of 1885. Ward areas are as determined by Mr. W. F. Learned of the City Engineer's Department; the figures given are the net results after deduct- ing certain tracts devoted to wharf, railroad, and park purposes, and practically un- available for dwellings. If the entire areas included within the legal ward boundaries were employed in the calculations, the figures for average population per acre would be correspondingly decreased.
" Ward 7	87.4	12,038	137.7	
" Ward 8	51.7	11,986	231.8	
" Ward 9	87.7	11,239	128.1	
" Ward 10	135.0	9,746	72.2	
" Ward 11	419.2	17,863	42.6	
" Ward 12	169.0	13,845	81.9	
" Ward 13 (So. Boston)	221.1	22,547	102.0	
" Ward 16	93.0	16,459	177.0	According to the report of the Department of Health for 1885, this ward had at that time the greatest average density of population of all the city wards.
" Ward 17	142.0	14,747	103.8	
" Ward 18	171.0	14,140	82.7	
Chicago, Ward 17	384.0	32,980	86.0	Population by census of 1880. Large, crowded tenements. Jewish quarter; very poor people, of filthy habits; the most densely populated ward in New York city.
New York, Ward 10	110.0	47,553	432.0	
<i>Certain Assessment Blocks.</i>				
Boston, Ward 6, Block 67	0.867	574	662.	{ Block bounded by property lines of Hanover, Commercial, and Battery streets. Block bounded by property lines of Morton, Salem, Cross, and Endicott streets. Block bounded by property lines of Nashua, Causeway, Billerica, and Minot sts. Block bounded by property lines of Cove street, Furnace street, and Cove place. Block bounded by property lines of Beacon, Clarendon, Marlborough, and Dartmouth streets. Block bounded by property lines of Tremont, West Brookline, and Pembroke streets and Warren avenue.
" Ward 7, Block 26	0.620	443	715.	
" Ward 8, Block 168	1.692	1,130	668.	
" Ward 12, Block 457	0.312	214	686.	
" Ward 11, Block 8	2.817	296	105.0	
" Ward 18, Block 22	2.211	391	177.0	

The figures which have been presented are interesting, I think, for comparison with each other, but would mean still more if they could be compared with a limit of allowable density of population; in other words, if we could learn whether they indicate a thicker settlement than it is practicable to accommodate. Any such limit must be roughly and arbitrarily set, but it seems to me that a reasonably low one is furnished by certain houses of the Boston Coöperative Building Company. Their property on Thacher and Endicott streets covers an area of between 6,000 and 7,000 square feet, which is built upon as closely as is wise. The buildings are as high as is desirable for tenement houses, the space within is economically used, and yet few, I presume, would take exception to the arrangements for the health and comfort of tenants. We might fairly assume, therefore, that the condition here found will give us a reasonable maximum limit for density of population, although the area involved is rather small for obtaining an average for comparison. The settlement on this property is at the rate of some 1,200 persons per acre. It would appear theoretically possible, therefore, with suitable buildings and oversight, to provide comfortably for even a greater population than is now found in the most crowded parts of the city.

Although the laws are not the only means for dealing with the question of overcrowding, they are perhaps the most direct means; and it may be well at this point to notice such provisions as they contain affecting this problem. The laws and ordinances now in force in this city provide that the Board of Health may remove the inmates of any tenement house or building in which the number of occupants is so great as to be the cause of nuisance and sickness, and the source of filth. The Statute Law of 1885 gives the Board power further to make such regulations, in addition to those definitely stated in the law, concerning the

ventilation and overcrowding of tenement and lodging houses and buildings where persons are employed, as it may deem necessary ; subject, however, to the laws relating to building in the city of Boston.

The New York law of 1887 provides that, "Whenever it shall be certified to the Board of Health by the sanitary superintendent that any tenement house, or room therein, is so overcrowded that there shall be afforded less than 600 cubic feet of air to each occupant of such building or room, the said Board may, if it deem the same to be wise or necessary, issue an order requiring the number of occupants of such building or room to be reduced, so that the inmates thereof shall not exceed one person to each 600 cubic feet of air space in such building or room."

In either city the matter is really left to the judgment of the Board of Health, although there may be a certain advantage in the wording of the New York law, which calls attention to a definite standard of air space, which it is well that landlords on the one hand, and those seeking to improve the conditions of the tenement houses on the other, should have clearly before them, and toward which it is to be assumed that the Board of Health will, so far as practicable, direct its efforts. An attempt, however, at the present time, to enforce generally any arbitrary standard of air space for existing tenement houses — except, perhaps, an absurdly low one, far beneath proper sanitary requirements — would, I think, be entirely impracticable. To insist, for example, that all tenement-house sleeping-rooms should average as much as 200 cubic feet, or even 150 cubic feet, to the occupant, would require poor people by the hundred and thousand to be ousted from their homes. Existing overcrowding can be lessened only gradually, and it appears to me that this can best be done by allowing the Board of Health wide

discretionary power, by the co-operation and watchfulness of private citizens and organizations in pointing out cases for action and seeing that the powers invested in the authorities are utilized, and by publicity on the part of the Board of Health of the results attained.

The work is a difficult one, without doubt. It requires money and assistants and the exercise of much good judgment. The tenement-house population is a shifting one, the conditions in any one house are constantly changing, and the persons removed from one apartment are very likely to migrate to some other which is no better suited to their occupancy, until again discovered and routed out. Nevertheless, the evils of overcrowded tenement houses are so serious, that to my mind it seems certain that whatever is practicable should be undertaken to relieve the trouble; and certainly there are plenty of houses toward which the Board of Health could at once with advantage direct its efforts.

I would suggest, moreover, as likely to be an aid in dealing with certain cases, that the Board of Health should be given authority to serve notices, at its discretion, upon the owners or lessees of tenement and lodging houses, these notices to be of the nature of permits, assigning a limit to the number of occupants allowable in each apartment or house considered, a single violation of the terms of the notice to be followed by a warning; and a subsequent violation to be treated as a criminal offence. The mere removal of an excessive number of families from a house might otherwise be followed by an immediate refilling, until the next inspection.

The matter of ventilation is of course very intimately connected with overcrowding, since if even small sleeping-rooms were at all times sufficiently well ventilated, much of the harm coming from the degree of overcrowding found in this city

would be obviated. Sufficiently good ventilation for the number of occupants often found, however, I judge to be impracticable. There is, to be sure, a constant, unperceived interchange of air between the inside and outside of a house, especially in buildings not more tightly constructed than many of the tenement houses; and most of the sleeping-rooms in these houses are provided with one or more windows, which in warm weather are usually kept open for comfort and then give very good air. In cold weather, however, windows are kept closed, and the effects of defective ventilation become plainly marked.

The advantages of pure air are not commonly considered by tenants, and even if they were, poverty and consequent enforced economy in the use of fuel would lead many to prevent in every possible way the loss of heat; and doubtless an attempt properly to ventilate rooms by opening windows would often result in greater immediate peril from cold draughts than is suffered from bad air. I can see no better mode of dealing with this question, however, than to require, so far as possible, a proper size for inhabited rooms, and one or more windows in these opening to the outer air, and so arranged as to be conveniently opened from either top or bottom. If tenants are provided with suitable rooms and windows, and then neglect to supply themselves with fresh air, they must suffer the consequences.

The law requires that every tenement house "shall have in the roof, at the top of the hall, an adequate and proper ventilator, of a form approved by the inspector of buildings." This requirement is, I think, quite commonly observed, and appears to be a very sensible and efficient one.

The pressure of overcrowding is shown not only in the excessive occupancy of rooms properly suited to habitation and to sleeping, but in the employment of small inner rooms and

cellars and basements, unless the evil is reached by law. In New York and Boston somewhat elaborate provisions have been made in laws regarding these matters, and it may be well to refer to them here.

The law in force in this city prescribes that sleeping-rooms not having direct communication with the outer air shall be ventilated by means of two small ventilating windows or transoms communicating, according to circumstances, with halls or with external rooms that do have windows to the outer air. Possibly, with the ventilators and doors open, and under favorable conditions of ventilation in connecting rooms, a moderate interchange of air with these inner rooms might be effected. But in the cases we noticed there was often but one ventilating window, and that closed; and the only reliance was really upon the door, which, I presume, is usually left open. The rooms were, as a matter of course, close and ill-smelling. Moreover, they were almost invariably small and overcrowded, generally containing less than six hundred cubic feet, often presenting the appearance of having been cut off from other rooms so that a few more persons might be packed into overcrowded houses, and containing anywhere from one to six occupants each. They were naturally very dark, and, being occupied by the lowest class of tenants, could not be expected to be kept cleanly and sweet, and were, as a rule, among the worst rooms encountered.

About 60 of these inner rooms, with, say, 150 occupants, were specially reported by my assistants. Even if the number were considerably greater, it would yet constitute so small a percentage of the total number of rooms occupied, and the rooms are such an unmitigated nuisance, that I think the prohibition of their use for sleeping purposes, as at present arranged, is entirely warrantable in tenement houses of a low

grade. If these houses cannot be so adapted to the use of tenants as to afford reasonable sanitary provisions of light, air, and so on, then they had better not be allowed employment in such capacity at all.

Efficient means should also be taken to prevent the introduction of rooms such as I have described into new tenement and lodging houses. At first thought it may seem that to forbid the use of rooms not having direct communication with the outer air must limit occupancy to front and rear rooms in a large class of houses situated midway in blocks, and that it must thus in the case of houses built upon deep lots entirely prevent the economical use of the building space. Such prohibition, would, it is true, tend to prevent a niggardly use of the space; but experience elsewhere has proved that it need not interfere at all with a suitable development of the property; while, at the same time, it acts to bring about surprising improvements in the structural design of the tenement houses, which may easily be so constructed, with large light-shafts, as to afford light and air to every room.

Thus in New York city there has been a constant advance in tenement-house designs, induced by a steady raising of the standard of requirements on the part of the Board of Health, until there has come to be about as much contrast between the best recent designs and the designs common ten or fifteen years ago, as there is between light and darkness. The present New York law empowers the Board of Health to prohibit at its discretion the erection of new tenement houses, or the conversion to such use of old buildings, covering more than sixty-five per cent. of their lots. In view of the success which appears to attend the measures adopted for that city, I am of the opinion that limitations and requirements of similar character might well be introduced here.

Through the kindness of Mr. James C. Bayles, President of the Health Department of New York city, I am enabled to present a number of diagrams illustrating the advances in tenement-house construction to which I have referred, and of especial interest as showing what may be accomplished under the unfavorable condition of narrow and deep city lots. In this connection I also take the liberty of quoting at length from a recent report by Mr. Bayles, on "The Tenement-House Problem in New York:" —

With a view of illustrating the gradual improvement in the methods of construction with reference to light and air, illustrations are given showing, from the earliest years to the present time, the gradual but efficient and practical methods by which the largest amount of light and air space is secured for the greatest number of rooms that may be possible upon the limited ground area of a single city lot.

Results such as are now insisted upon by the Health Department were not deemed possible even a few years ago. No plan of a tenement house, apartment house, or flat is now approved by the Board unless every inner room has a proportionate amount of light and air directly communicable with the exterior air. The final outcome now is, that every builder and architect must seek, not only how to secure the best paying investment, but also the best sanitary and hygienic arrangement of the rooms, drainage, and plumbing of every tenement house he proposes to build. This result has necessarily been obtained by progressive stages. The opposition had to be gradually overcome, and the public to be educated upon these important subjects, and the competition of securing tenants by the improvements introduced in new buildings made an effectual aid in the enforcement of all the necessary rules for light and ventilation, as well as for other sanitary requirements connected with such houses. From the first approval by the Board in 1879 of light shafts aggregating in area not more than thirty-two square feet for each four or five story house, there has been a steady progress, until an aggregate area of 265 square feet is now required. It may be here mentioned incidentally that since 1886 there have been very few plans for large apartment houses submitted to the Board, it having become apparent, probably, that houses of this class were not profitable financially.

During these progressive changes in the construction of tenement houses, almost innumerable varieties of plans were evolved by the ingenuity of architects and builders, and the former have been stimulated to the study of new methods and plans as each progressive requirement has been insisted upon by the Board.

In the public discussions of 1879, which resulted in the enactment of the tenement-house laws of that year, the question arose as to what constituted a satisfactory plan for a tenement house, due regard being given to the necessities of four families on each floor, and the size and value of lots. A public-spirited citizen offered a large sum of money as a prize for the best tenement-house plan, and several hundred of these plans were offered.

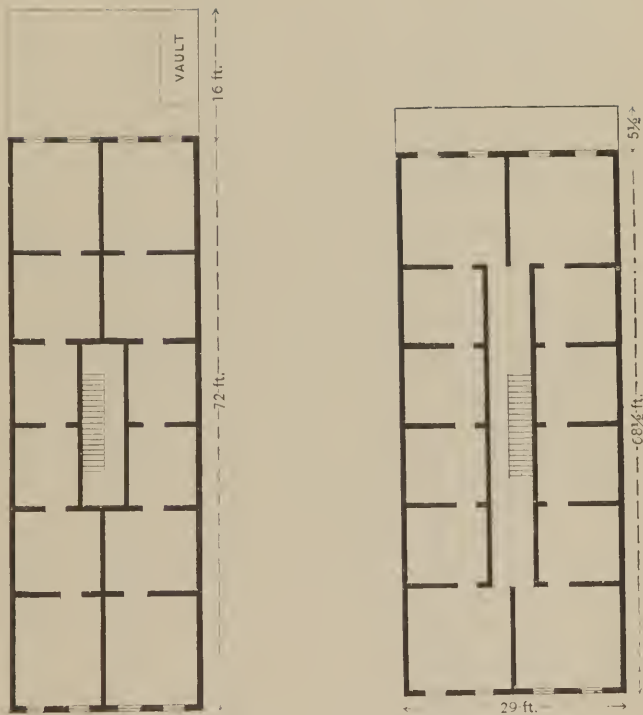
The great improvement in the construction for light and ventilation of tenement houses now being enforced, shows well by comparison with these prize plans. Indeed, the present typical plan is superior in many respects to the one to which the prize was awarded in 1879.

In many instances, in the earlier attempts, the locations selected for water-closets on the different floors proved very objectionable, being sometimes immediately adjacent to the kitchens or bedrooms, and without ventilating shaft, resulting — by neglect and misuse — in becoming offensive and unbearable nuisances, contaminating the atmosphere of dwelling apartments; and when placed in the ends of the halls between the adjoining kitchen rooms, with imperfect plumbing and inadequate flushing arrangements, permitting the regurgitation of their offensive contents into the kitchen sinks. The very great improvement in this respect is seen in the methods of construction and location as now insisted upon by the Board of Health. By these changes these sources of danger to health are now removed to the farthest limit from dwelling and sleeping rooms, and so constructed, plumbed, and flushed as to secure the most perfect utilization of the "water-carriage system" for the rapid removal of the contents, and at the same time so furnished with means for ventilation as to prevent offensive odors from contaminating the respirable atmosphere of the rooms or halls.

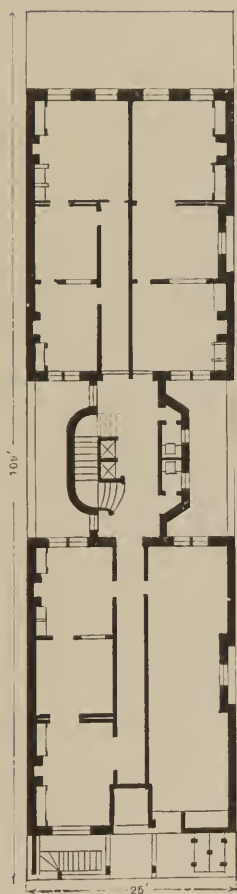
In March of the present year (1887), the lighting and ventilation of tenement houses was made a subject of careful consideration by the Board of Health, resulting in the adoption of the following resolution: —

Resolved, That the Regulations of the Board in relation to Light and Ventilation of New Tenement Houses be and are hereby amended as follows:—

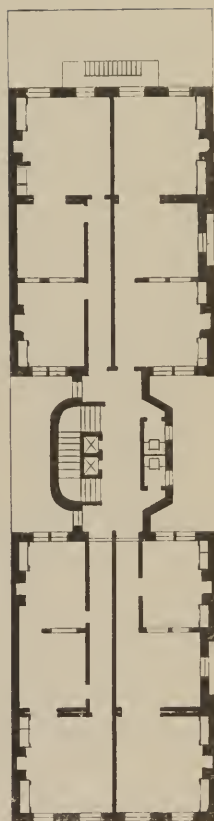
No plan for light and ventilation of a tenement house with apartments on five or more floors, and having more than twelve rooms on a floor, to be erected on an ordinary city lot, except a corner lot, will be approved by this



NEW YORK CITY.
 TYPICAL TENEMENT HOUSE PRIOR TO 1879.
 (Inner rooms neither lighted nor ventilated.)



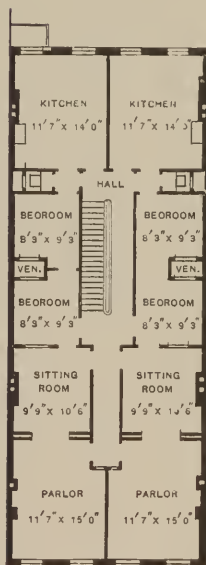
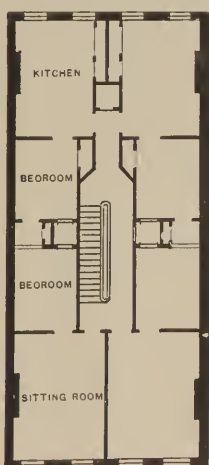
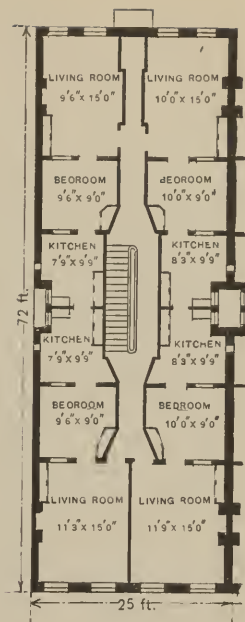
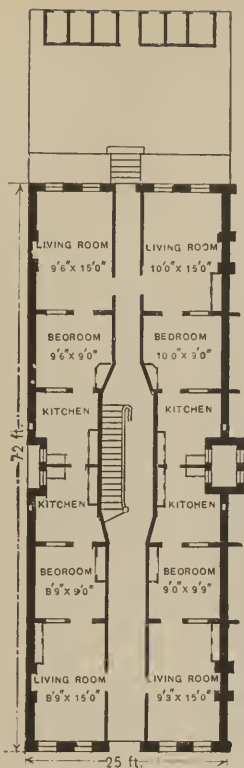
FIRST FLOOR.



UPPER FLOOR.

NEW YORK CITY.

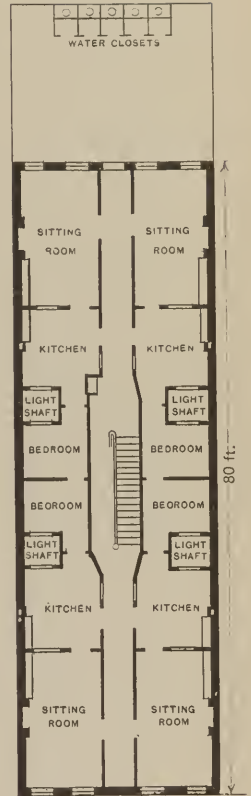
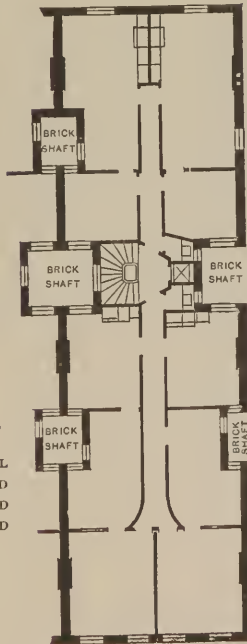
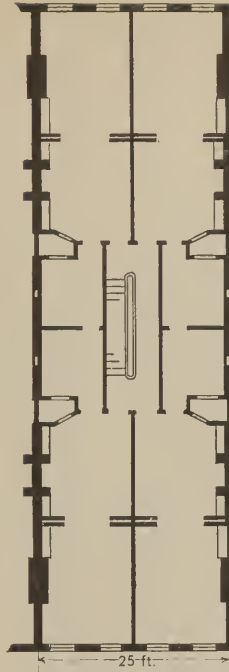
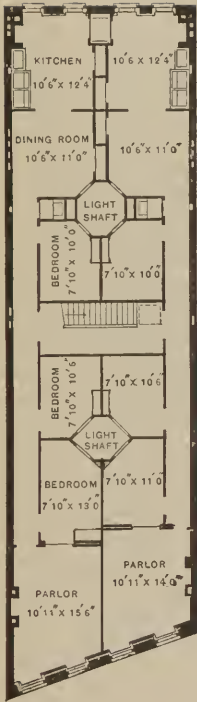
FIRST PRIZE PLAN OF THE TENEMENT-HOUSE DESIGN COMPETITION
OF 1879.



NEW YORK CITY.

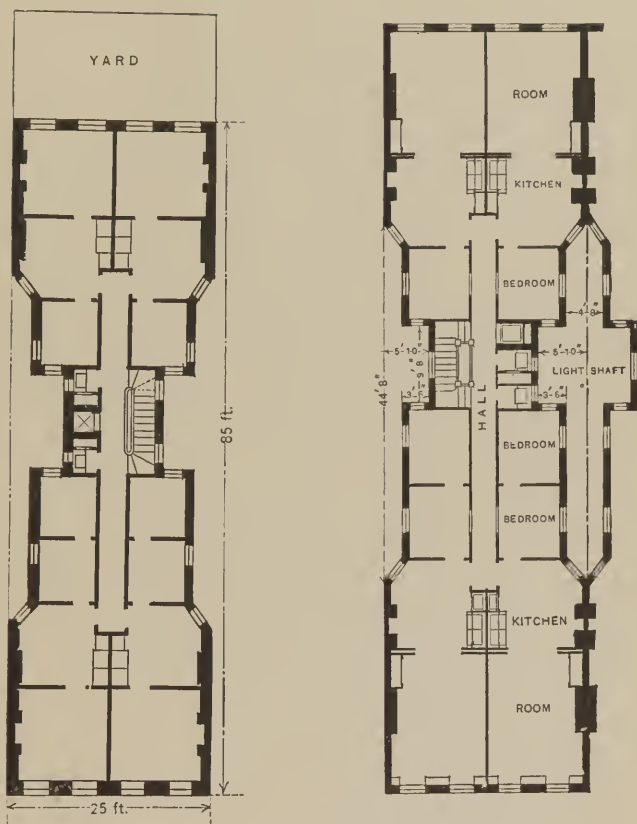
GROUP OF THE EARLIEST PLANS APPROVED BY THE BOARD OF HEALTH
UNDER THE LAW OF 1879.

(Small light and ventilation shafts for rooms farthest from outer air.)



NEW YORK CITY.

GROUP OF PLANS WITH ALL
INTERIOR ROOMS CONNECTED
WITH ENLARGED STUDDED
SHAFTS FOR LIGHT AND
VENTILATION.



NEW YORK CITY.

PRESENT TYPE OF TENEMENT FOR FOUR FAMILIES ON EACH FLOOR,
IN LOTS 25 FEET BY 100 FEET.

(Open courts instead of studded light shafts.)

Board, where more than sixty-five per centum of the lot is to be covered, unless the courts to light and ventilate the interior rooms thereof shall have an area of at least two hundred and sixty-five square feet, and where there are to be twelve rooms on a floor, the area of such courts must not be less than two hundred and fifteen square feet.

Resolved, That this amendment shall take effect April 11, 1887.

This present plan marks the most desired and greatest improvement in tenement-house construction which has grown out of sanitary legislation and the efforts of the Board of Health since 1879. Instead of dark, unventilated rooms and halls, peculiar to tenement houses of that date, the rooms in the houses now being built are well lighted and ventilated by courts as large in area as can possibly be required, without reducing the size of the rooms to an impracticable degree. In place of the old privy-vault in the yard, the use of which in cold weather was often impossible to the debilitated or sick, every two families are provided with a water-closet on each floor, with suitable arrangements for flushing, and the compartments are well lighted and ventilated. The cellars, formerly noisome, unventilated, unlighted, unpaved, and damp, are now provided with windows to the outer air, and the floors are concreted throughout. The old hydrant in the yard, with its unconnected cesspool for receiving house-slops and liquid waste for the whole household, is now abolished, and water is supplied in each apartment, and in connection with suitable kitchen-sinks and washtubs; and instead of the defective earthen drains with leaking joints, saturating the adjacent ground, and open joints in waste and soil pipes,— where they were provided in the older houses, — and untrapped and unventilated waste-pipes, placing the living-rooms in direct communication with the public sewers, the plumbing system is now up to the highest standard of modern times in every detail, and superior in all essentials to the plumbing and drainage to be found in even the best private houses, except those of the most recent date.

These great improvements in the hygienic and sanitary arrangements of the tenement houses as now built, must necessarily reduce the death and sickness rates of such houses. The extent to which this is true can well be estimated from the fact that in each of the recent years these changes and improvements have been provided in new tenement houses for upwards of 60,000 persons.

The statute law defines a "cellar" as a "basement or lower story of any building of which one-half or more of the height

from the floor to the ceiling is below the level of the street adjoining." The occupancy as a dwelling of any cellar, without permit from the Board of Health, is illegal, unless there is compliance with certain provisions of the law relating to height, ventilation, drainage, and so on. Moreover, the Board of Health is given authority to make such other regulations as to cellars as it deems necessary, subject to the Boston building laws. Very few cellars, as above defined, were found occupied; and on the other hand there was frequent evidence of cellars which had once been occupied having been abandoned. There remain, however, some cellars and numerous basements, usually about on the border line of cellars as defined by the statutes, which are occupied not only during the day, but also for sleeping at night.

The objections to the occupancy of cellars — and I will include these objections also with reference to basements — arise, I suppose, from the likelihood of their being dark, ill ventilated, and damp, as well as unwholesome from the ground air which enters them. Basement rooms can usually be fairly well lighted and ventilated, but I doubt if they can be kept suitably dry, especially in made land, without a good cemented bottom. Any cellar in such locality with simply the natural earth bottom will be damp. The covering it with a floor renders the dampness less perceptible, but its existence will be shown in the decay of planks and in the moulding of oil-cloths and other articles. It is to be borne in mind that nearly all the region occupied by the buildings which we are considering is "made land," the cellar bottoms of the houses being elevated but slightly, and sometimes not at all, above the level of high-water. It is reasonable to suppose, therefore, that without special precaution there will be undue dampness in such cases. This would be most noticeable in winter, and might

doubtless be shown experimentally, by suitable tests. In a summer day I attempted to test the humidity with hygrometers in a number of Stillman-street houses ; but although there was a considerable difference in humidity between the basement and second stories, I did not consider the results obtained very uniform or satisfactory. In the houses we inspected, not more than thirty or forty basement rooms were specially reported as occupied for sleeping, though the number occupied as kitchens would be considerably greater.

It would be a desirable and perhaps warrantable thing to require that the basements or cellars of all tenement houses should be made water-tight by cement, concrete, or asphalt, — the expense of cementing being perhaps not more than would be offset by one or two months' rents from the house, while the construction is a permanent one, of real value to the building ; but with even more propriety, I think, it might be required that this should be done in buildings, the cellars or basements of which can be occupied as dwellings, or especially as sleeping-rooms. The use of the basements or cellars of tenement and lodging houses for sleeping purposes might indeed with advantage, it seems to me, be prohibited. The benefits would be undoubted ; and the number of houses affected would be so small that the plan cannot be regarded as at all impracticable.

GARBAGE REMOVAL.

It is required by law that tenement houses shall be kept clean and free from accumulations of dirt, filth, garbage, and other objectionable matter, whether within the house or in the yard or alley connected with it. Such material must not be thrown into the street, but must be stored in suitable receptacles, from which it will be collected by the city scavengers. Garbage is

thus removed at least twice a week in the winter months and three times a week in summer.

As regards the removal of garbage, so far as could be judged the work of the city scavengers is faithfully performed, and such defects as were observed arose from the dirty habits of tenants, many of whom do not hesitate to throw garbage, or, indeed, filth of any description, at random over yards, alleys, and shed roofs. As a rule, there is in the rear of each tenement house a small yard or area, which is planked over, and is reached from the street either by an alley between adjacent houses, or by a covered passage-way under the building. A considerable part of the yard is taken up by a shed for the storage of wood and coal and the setting of garbage barrels, leaving a clear space which varies in size, but which in the thickly settled parts of the city often does not exceed one hundred or two hundred square feet. Nearly always the passageways, yards, and fuel sheds were found in a reasonably neat condition, but in some forty or fifty cases, constituting not more than five per cent. of those examined, the premises were badly littered with garbage, and sometimes with much worse filth.

In a few cases, the worst examples of which are probably at the corners of Salutation and Hanover streets, houses have been built completely covering their lots, so that there is no yard room whatever, and garbage has to be stored within the house itself, a very offensive and objectionable thing. In each of the cases to which I have special reference above, the garbage is thus stored in barrels in a closet on the first floor of a house occupied by a dozen or more families. In one of these cases the inspector reported the garbage closet in a very foul condition, and the stench from it strongly perceptible to the very top of the house, which is of five stories.

The yards and alleys are so readily accessible from the street,

and often are so open to general observation, that it is practicable for the inspectors of the Board of Health to exercise a tolerably close supervision over them, and this appears to be done. In a certain proportion of offending cases, the habit of cleanliness can be enforced by sharp oversight and repeated admonishings from the inspector; and so far as it can be successfully used this method is undoubtedly far the best. In other cases, however, nothing will suffice but recourse to the law, which seems clear and is accompanied by a heavy penalty. It is unquestionable that a considerable number of the forty or fifty bad cases reported are habitually bad; and although upon the appearance of a city inspector there is at least the semblance of a prompt compliance with his directions about cleaning the premises, I am of opinion that the work is, in such places as the above, short-lived, and that more effective measures should be employed. Similar remarks might be made regarding the streets. So far as they were incidentally observed, they were not often noticed to be littered or fouled with garbage thrown from private premises. Certain narrow streets, however, such as Stillman and Morton, were found very much littered in this way; and I have been informed that often a city gang would have scarcely finished its work in these streets before the latter would again be fouled by the garbage thrown from the various houses. In general, though, the streets appeared to be in as good condition as could be expected, considering defects of construction; and the questions connected with them have, perhaps, already been sufficiently discussed in the public press.

UNCLEANLINESS WITHIN THE HOUSES.

As regards the condition of the interior of the houses themselves, it is not to be supposed that the law to which reference

was made a short time since contemplates a very scrupulous degree of cleanliness, but only such as may fairly be regarded as essential to decency and health. Just what requirements are thus involved cannot be very nicely stated. Dirt is dirt, to be sure, and it is not difficult to judge when a tenement or a room is in a poor condition as concerns cleanliness; but it is often not so easy to decide whether that condition is sufficiently poor to warrant official interference.

Many a person accustomed only to the thorough cleanliness of a well-ordered home would unhesitatingly condemn the conditions encountered in nearly all the cheaper tenement houses, and would set up a standard which is at present entirely impracticable. A person is liable to receive false impressions, too, in his examinations. He enters a room the walls and ceiling of which are begrimed, as though from years of neglect; but they may have been whitened within a week, and their discoloration be due to the smoke from burning the hoops of sugar casks, and various other rubbish, which many of the people pick up along the docks and elsewhere. A terrible smell pervades the room, but it may arise simply from the cooking; some of the dishes prepared by the Poles, particularly, giving out most obnoxious odors. The room is untidy, and the bare floor littered with scraps of food and articles of clothing; but the presence of several young children while the mother is busy with washing or other work is accountable for this, and later in the day the floor may be found well scrubbed or swept, and the room set to rights. Now there are many such cases, in which a person will be greatly repelled by what he perceives, but in which the influence upon health of the conditions noted is probably very small. When, however, permanent accumulations of rags are found littering a room, or dirt from the floor is found swept into piles in corners or behind doors, or garbage stored

away in closets or under sinks, or the paper foul and rotten on the walls, a state of things has been discovered which will justify interference.

From the fact that the interior of a house is not conveniently open to observation, and that considerable time is required for making a tour of many tenements, the inhabitants of which are constantly shifting from place to place, it is plain that by no practicable system of house-to-house inspection could much be accomplished in the way of maintaining a general high standard of cleanliness. It would be practicable, however, to take account of those places deserving special oversight, and to prevent the long-continued dwelling of a family in a state of filth.

The rating of a house as regards its cleanliness is an arbitrary matter, and exact figures would be of no great value ; it may be well enough, though, to say that of the houses reported upon, an average of about one in seven were characterized in this particular as "poor ;" of the remainder about two-fifths were classed as "good," and the rest as "fair."

For various reasons the cellar is closely connected with the general sanitary condition of a house, and in the worst tenement houses the dirty and negligent habits of the inmates are very apt to be displayed in the cellar, which therefore especially deserves inspection. In some twenty-five or thirty of the houses examined, the cellars were found badly littered with garbage, occasionally by a dead animal, and in at least half the number by human excrement.

WATER-CLOSETS AND PRIVIES.

The condition of water-closets and privies, as observed during this examination, was, in a considerable proportion of cases, extremely objectionable. The problem of the removal of house wastes has its greatest importance in connection with the dis-

posal of the dejections from the human body, which afford the most dangerous possible medium for the spread of numerous infectious diseases, and which, aside from that, may easily become a disgusting and unbearable offence. It is a cardinal sanitary principle that animal and vegetable matter of any kind in a state favoring decomposition should be promptly removed from the vicinity of dwellings, certainly within a day or two, and as much sooner as is possible. It is only in comparatively recent years, however, that the general introduction of running water within the houses, supplemented by a system of sewers constituting the so-called water-carriage method of sewage removal, has rendered a prompt conveyance from the premises of urine and fæces really practicable; and even now it is only gradually and imperfectly that a proper standard is approached. The general custom in the past, and the one even now in use in considerable portions of this and all the other large cities, has been to store fecal matter in privy-vaults or cesspools.

Dr. O. C. DeWolf, Commissioner of Health of Chicago, in his report of May, 1887, estimates that fully one-third the entire population of that city is yet dependent upon privy-vaults.

In Boston several different constructions of vault are to be found. The oldest and simplest type has the sides and bottom faced with planks, and has no outlet save through the top. Wooden vaults are now illegal, however, under all circumstances, and have generally been replaced by other constructions, although more or less of them appear to be still in existence. By a city ordinance of 1872 it was required that henceforth privy-vaults should be constructed of brick and cement. The brick vaults appear to have been usually built tight, or, if connected by a drain with the street sewer, to have become in time practically tight through the stoppage of the imperfectly flushed outlets.

These different forms have thus effected a storage, ranging in duration from a few months to perhaps two or three years, according to circumstances, of fecal matters supplied, sometimes, by fifty or one hundred people to a single vault. The evil results inseparable from such a practice, aside from the mere offence occasioned in the way of bad odors, have led to a demand for the abandonment of the use of privies and cess-pools; and by a State act of 1885 they were directed to be supplanted, at the discretion of the city Board of Health, by water-closets, upon all streets having sewers. In accordance with this act the abolishment of privies has been steadily carried on, and in the two and one-half years since the passage of the act down to the close of 1887, about 3,400 privies had been removed. This work seems to have been most vigorously prosecuted in Wards 8 (West End) and 13 (South Boston), in each of which there have been more removals than in the two North End Wards 6 and 7 together.

The practice of the Board of Health has been, I believe, to abolish privy-vaults whenever well-founded complaint has been received, either through the inspectors of the Board or from other sources, that a vault was offensive. In spite of the large number of vaults already done away with, of the nine hundred houses inspected under my direction fully a quarter were still dependent upon this dangerous system.

Although the policy has been pursued of doing away with privy-vaults, the Board of Health has thought best to allow, in certain cases, as in connection with large tenement houses of a low grade, the use of an improved construction known as a flush-vault. It is a cemented brick vault, with an outlet at the

Vaults abolished in certain wards, 1885-87:—

Ward 6 . . . 84	Ward 8 . . . 334	Ward 12 . . . 114
Ward 7 . . . 112	Ward 9 . . . 158	Ward 13 . . . 132

bottom, connecting by means of a tile drain with the street sewer. A short iron pipe, with a flange at the bottom, a half turn at the top, and a handle reaching up nearly to the floor of the privy apartment, serves at once as a removable plug to close the orifice at the bottom of the vault, and as an overflow after the vault becomes filled to a certain level. These flush-vaults receive a supply of water variously from sinks, from roofs, and in some cases from special service-pipes. By raising the plug the contents of the vault are permitted to run rapidly out to the street sewer.

These vaults have an advantage over the old ones which they displace, only in so far as they offer opportunity for frequent and thorough flushing, and it is evident that their value must, therefore, be dependent upon the fidelity with which that is done. It is assumed that they will be flushed every two or three days, but in many cases they are not flushed with any such frequency, and some were observed which had not been emptied for a very long time, and which were in as unsatisfactory a condition as any ordinary privy-vault. The complaint was made regarding some which are mainly dependent on rain-water for a flushing supply, that they are liable to be deprived of this for a long time in summer droughts, and that when the rain does come it stirs up the contents of the vault so that a doubly offensive smell is given off. Yet, in spite of its defects, this construction probably offers, in certain cases, the best solution of a difficult problem.

Although privy vaults and cesspools are objectionable, it must not be assumed that, when they have been replaced by water-closets, the question of the removal of the most dangerous form of house sewage has been satisfactorily settled. Water-closets are a good contrivance when kept clean and inoffensive; in other words, when properly flushed and decently used.

But both of these essential conditions are dependent upon the habits of the people who use the closets, and among the population with which we have to deal there are many whose habits are of the most careless and filthy nature.

It is plainly important then, that, as regards construction, the closet used in tenement houses should be of the simplest possible form, with a smooth and durable inner surface, and a thoroughly efficient flush. There is nothing in such requirements involving unreasonable expense, but it is almost unnecessary to say that we do not find them generally met in the houses we inspect. Many of the closets have bowls of iron coated with enamel, or at least the iron was once so coated; but the enamel has generally scaled off, and the iron surface remains in such a rough, corroded, and foul condition that really thorough cleansing is impossible.

Even if cleansing were possible, the arrangement for flushing is usually inadequate. Of some 350 water-closets whose mode of flushing was especially reported, about 60 per cent. were flushed by direct connection with service-pipe. In most such cases the force of the flushing stream is small and poorly directed. Furthermore, there is a possible danger, not commonly considered, of an occasional contamination of the water in the service-pipes if the flush-valve happens to be left open at a time when the supply of water is for any reason temporarily shut off.

A dozen water-closets were reported, half of them in tenement houses as legally defined, whose only contrivance for flushing consisted of untrapped waste-pipes from sinks, and half a dozen more which were flushed only by trapped waste-pipes. All these closets were naturally found very foul, and it is hard to conceive of any more miserable arrangement than that mentioned, the only excuses for which are that some

expense is saved in construction, and that the annual water-rate for a closet supply is avoided. Thirty closets were returned as out of order, a few on account of the outlet having become clogged, but most because some part of the flushing apparatus had been broken.

A much more glaring evil, however, and one of probably much more consequence than most of the defects that have been mentioned, is found in the filthy condition of the seats and apartments of many of the privies and water-closets. Of about six hundred water-closets that were reported upon, nearly one hundred were declared to be in a filthy condition; and by this was meant, not simply that the closet bowls were dirty, but that the seat and apartment were so fouled that they could not be decently used. Some of these places were in a most abominable state. No cleanly person could be induced to go near them. Indeed, the tenants themselves do not go nearer than absolutely necessary. Fæces and urine are temporarily stored in the living-rooms in vessels and buckets, and at convenient opportunity these are taken to be emptied. The door of the water-closet apartment having been opened, the contents of the bucket are given a throw toward the bowl, which thus serves simply as a slop-hopper, while the whole place is befouled in the most disgusting way.

The fault lies directly, of course, with the people who have the use of the closet or privy. Not all of these are equally to be blamed, though, for sometimes the filthiness of a single family offsets the cleanly habits of all the rest of the house. Often it is the case that water-closet or privy apartments in tenement houses are not properly protected by lock and key, but are accessible to the drunken loafers from neighboring saloons and the streets. An indirect cause also for the conditions that have been mentioned lies in the improper location of many of the water-closets, which

are in dark corners or inner closets in cellar or basement, where nothing can be seen except by artificial light, and where also no suitable means of ventilation exist. Light is absolutely essential to cleanliness in such places, and should be secured in every possible case.

Frequently it will be found that tenement houses are not provided with a suitable number of water-closets or privies for the convenience of their many occupants. The proper number to be required is a matter of judgment, but the minimum limit has frequently been placed at about one for every twenty persons. The present New York law regarding tenement and lodging houses requires them to be provided with as many water-closets as the Board of Health shall specify; but the number is, in any case, to be not less than one for every fifteen occupants in lodging houses and not less than one for every two families in dwelling houses. The Statute Law of 1871 required that in Boston the number of closets should be not *less* than one for every twenty occupants of a tenement or lodging house. The law of 1885 places the decision of the proper and requisite number of closets with the Board of Health, but now makes the curious exception that the board shall not require *more* than one for every twenty persons. This appears to be granting a pretty wide discretion *outside* of the limits within which it is needed.

In an Italian tenement house at No. — Friend street, a filthy little room with no ventilation or lighting worthy the name, the seats and apartment in a vile state, was found to provide two water-closet bowls for between sixty and seventy occupants of the house.

At No. — Anderson street is a little court. Here a single water-closet in a small shed, the bowl full and in an abominable condition, was the only accommodation in this line for eight or

ten families of colored people, besides the hands in a stable and a couple of little shops.

It is to be observed that the law doing away with privies allows their continuance upon streets not having sewers. There are many little courts, alleys, and so-called avenues which appear to come under this exception, made presumably for the purpose of sparing the expense of long branch sewers or drains. As a rule, I think the removal of privies from these localities is more essential than from almost any other situation, and it is unfortunate that excuse should be found for excepting them. The houses will certainly have to be drained at some time, and it would appear as though but moderate expense would be involved in conveying away water-closet drainage in small drains placed at shallow depth and running to the nearest public sewer.

DRAINAGE OF THE HOUSES.

A great part of the drainage system of most houses is so inaccessible that it is difficult to learn much regarding its construction. Soil and waste pipes are concealed in walls, and drains are often out of sight under cellar-bottoms, and in order to reach them liberties must be taken which would hardly be warranted in a private inspection. A lack of tightness, even when joints are concealed, may often be discovered by testing with peppermint, and this test was frequently, but not regularly, applied.

It is evident that, under the requirements of the Board of Health and the Inspector of Buildings, the drainage of the tenement houses has much improved from the condition that must have existed perhaps no more than ten years ago. The number of well-constructed iron drains is much larger than would be

supposed, and occasionally we find tenement houses with an admirable system of pipes and fixtures throughout. In portions of the 8th ward, on Nashua street, for example, where within a couple of years many privies have been abolished, I frequently found the latter replaced by water-closets of good type, thoroughly flushed and ventilated, and in every way satisfactory. In spite of all that has been done, however, a surprising number of defects of great variety are encountered. These are such as might naturally be supposed to exist in the absence of complete and systematic inspection, and are variously due to the survival of antiquated and inferior work, which has fallen out of repair, and the design of which is not in accordance with present standards; to cheap and poor construction of more recent date; and to the negligence and ignorance of tenants and landlords. Occasionally a drain-trap was found with the clean-out cap removed and lost, so that sewer air had free access to the house; or an old pipe, with sewer connection, cut off, but left open; sink-drainage carried through cellars in open and sometimes dilapidated and leaky wooden troughs; old wooden box-drains running just under the cellar-bottom, sometimes clogged, again free, but uncovered and rotted away so that the current within was open to view; pipes imperfectly joined, or with soft and destructible material, or even with one pipe merely thrust into the open end of the other. All these and other defects were repeatedly observed.

The drainage system of the poorer tenement houses is not elaborate. A vertical main pipe, starting at the upper fixture, receives the branches from the sinks and water closet or closets, and, on reaching the cellar, runs nearly horizontally as the house drain, passing on to the street sewer. Scarcely one in five hundred of these houses contains a bath-tub or wash-bowl, or any other variety of fixtures than those mentioned.

Some, indeed, contain no running water, and no plumbing-fixtures of any description; but they are quite exceptional.

One evil which is very common, and which seems to me a serious one, is the omission to supply the waste-pipes of sinks with traps. Of more than 2,000 sinks which were examined by my inspectors, 60 per cent. were found to be not individually trapped. Of these, only 1,000 were in tenement houses as defined by law, and yet precisely the same percentage of this number proved to be without traps. It was frequently noticed that although, upon examining sinks, no traps were to be seen, yet the tenants claimed that their sinks were trapped, and that they had been so informed by city inspectors. In such cases it would be discovered that there was a trap upon the main drain, often directly at the foot of the vertical main waste-pipe, that being the only trap upon the entire waste-pipe system. Such an arrangement does, it is true, serve to disconnect the house pipes from the public sewer; but it does not serve to disconnect the different floors and tenements from each other. If nothing but clean water were poured down the sink waste-pipes, the plan might answer well enough. But, unfortunately, that is not the case. Even with decent use of a sink a great deal of animal and vegetable matter is carried along in the waste water, which coats and fouls the pipes. But, far worse than this, the sinks are liable to be used, and frequently are used, by a low class of tenants, as a means of getting rid of chamber-slops. The practice happened in two or three instances to be actually observed by my assistants, was acknowledged in others, and in numerous others was the subject of bitter complaint from tenants. All the sinks in a house, and especially those below the offending tenants, are liable thus to be rendered offensive at times. Repeatedly I have happened to be in kitchens when waste

water, doubtless chamber-slops, was sent down the main waste-pipe from some sink above, and the odor that was forced out into the room was unmistakable in character, and was most sickening. I noticed frequently that tenants had placed wet cloths, pans, saucers, or other rude contrivances over the sink-strainers in an attempt to keep back the vile stench.

I do not find any law or ordinance directly bearing upon this matter of traps upon sinks, except that in a section of the City Ordinances for the Regulation of Plumbing, such traps are required for work performed after March, 1883. I am aware, however, that the Board of Health assumes to require the placing of traps upon such sinks as are complained of and decided to be offensive. An excuse has been given for the construction that has been described, that, in many cases, it is better not to have traps for the sinks, inasmuch as tenants sometimes sift ashes into the latter, and the traps become clogged; but I do not feel that very much weight should be given to that consideration. It seems to me very unsafe to allow an open connection through waste-pipes between different tenements, and desirable indeed that every waste-pipe should have a trap closely beneath its fixture. I am confident that the practice of allowing a single trap on a main pipe to answer for the whole system of the house cannot be successfully defended, and ought to be abolished.

Further, if the practice is permitted, then the most wretched plumbing-work may consistently be allowed for all the drainage system above the main trap. If there is to be a free outlet for foul air through every sink, of what consequence is it whether the pipes are made tight anywhere, beyond what is necessary to prevent the leakage of water? In between forty and fifty cases we found the sink waste-pipes simply stuck in to the open end or branch of the larger main pipe, without any pretence of

a tight connection. In fact, it was amusing to notice that in several cases sink-wastes had been provided with good traps, and then, beyond these, was the open connection, rendering the trap itself entirely valueless.

The specified requirements of the law of 1871, regarding the cleanliness of tenement and lodging houses, together with the general powers belonging to the Board of Health, apparently furnish sufficient authority for coping with some of the grosser evils noticed in connection with the drainage system of tenement and lodging houses, such as a filthy condition of fixtures, or defects of drainage of such importance as to give rise to undoubted nuisances. But, in order that the whole problem may be satisfactorily dealt with, I am of opinion that the Board of Health should have power concerning the entire house drainage system proper, and the connecting fixtures, to establish such detailed regulations, and to exercise such discretion as it may deem wise, whether it be as to material, or arrangement, or construction, or any other particular. A successful grappling with this question demands attention to details which it is useless to attempt to comprise in specific laws of universal application, but which should be left to the judgment of proper and competent authorities.

ABSTRACTS OF INSPECTORS' REPORTS.

The following brief abstracts from inspectors' reports will serve to illustrate some of the various conditions which were encountered in our examinations : —

Ward 6. No. — North street. Nine families, mainly Italians, with numerous lodgers. Altogether, some sixty persons, for whom there is but a single water-closet ; this is in the cellar, inconvenient for the tenants, but accessible to street loafers,

and was found out of repair and very filthy. Hallway and cellar stairs also filthy. Nearly all sleeping-rooms in the house badly overcrowded.

Ward 6. No. — Salutation street. Broken drain in cellar, and pool of sewage, which was stated to have been standing as found for two months, causing smell which was noticeeable to the top of the house.

Ward 6. No. — Salutation street. Cellar very damp; planking rotten and mildewed. Water-closet in cellar filthy, and so offensive that tenants on floor above could not use chamber which was directely over the closet, but the whole family of six persons slept in their only remaining chamber. Sinks on four floors, none of them trapped, and those on the three lower floors frequently rendered offensive by the pouring of foul slops into the upper sink.

Ward 6. No. — North street. Cellar used by Italians for storage of fruit, fish, cheese, etc. In this cellar a hole had been roughly broken into the iron drain, so that into this hole, which gave free exit for drain air into the eellar, might be thrust the end of a drip-pipe from the bar of a neighboring saloon.

Ward 6. No. — Commereial street. Rear eellar, dark and unventilated, flooded with sewage, which had overflowed at a bad break in the drain. The drain, which was of earthenware, was leaky at other points also. Tenants had notieed steneh from eellar, and condition was judged to have been for months as described.

Ward 7. No. — South Margin street. Three tenements. Family of three adults and five children sleeping in one room. House in poor repair from top to bottom; ceilings discolored, plaster falling, windows broken, stairs rickety, and so on.

Ward 7. No. — Endicott street. House occupied by nine

families. Nearly all the sleeping-rooms overcrowded; in one tenement six persons sleeping on the kitchen floor. Sinks trapped, but the plumbing-work poor and leaky, and some of the sinks very foul and offensive to the smell. Halls dark and unventilated. Cellar damp from leakage of water through walls and from defective drainage-pipes. As many as ten drunken men at a time said to have been seen asleep in this cellar; one corner of the cellar covered with fecal matter. Said to have been much sickness in the house.

Ward 8. No. — Porcelain place. Said to have been three cases of diphtheria and two of scarlet fever in the house within a year. Drainage defective. Brick cesspool-trap in cellar, with some of the bricks fallen out so that the sewage could be plainly seen and smelled.

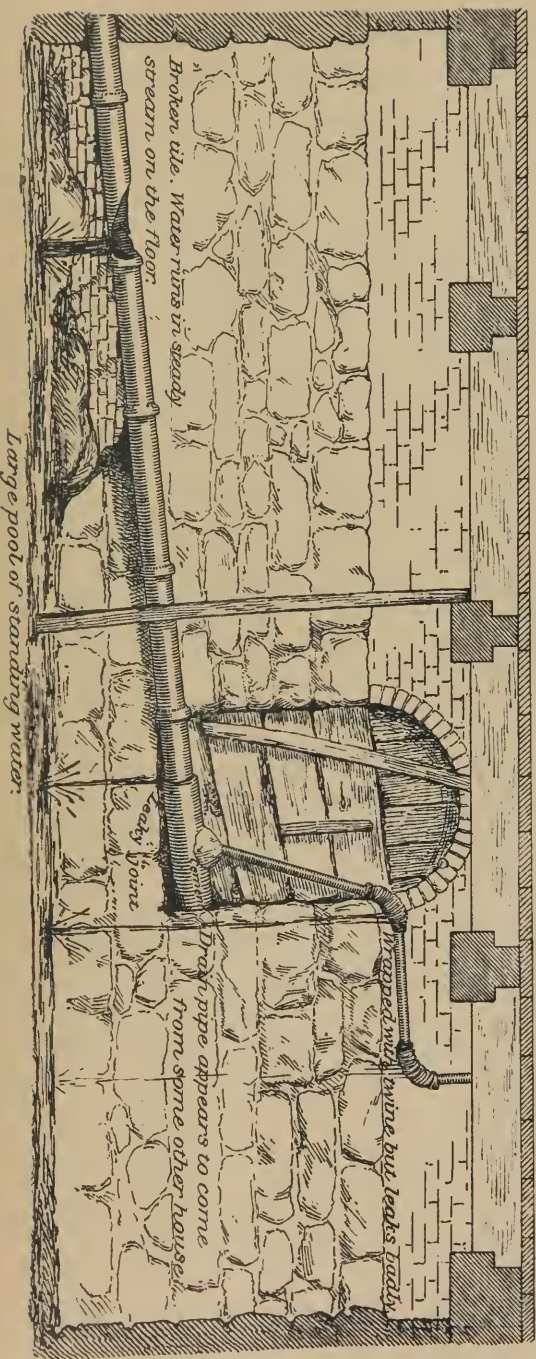
Ward 8. No. — Nashua street. Flush vault (poorly cared for) built directly against ell, and directly under and within a few feet of sleeping-room windows. Plumbing-work in house very poor, and sinks not trapped.

Ward 8. No. — Cushman avenue. Water-closet bowl in cellar broken away from trap, and in consequence matter discharged mainly upon the cellar-bottom, which was very filthy.

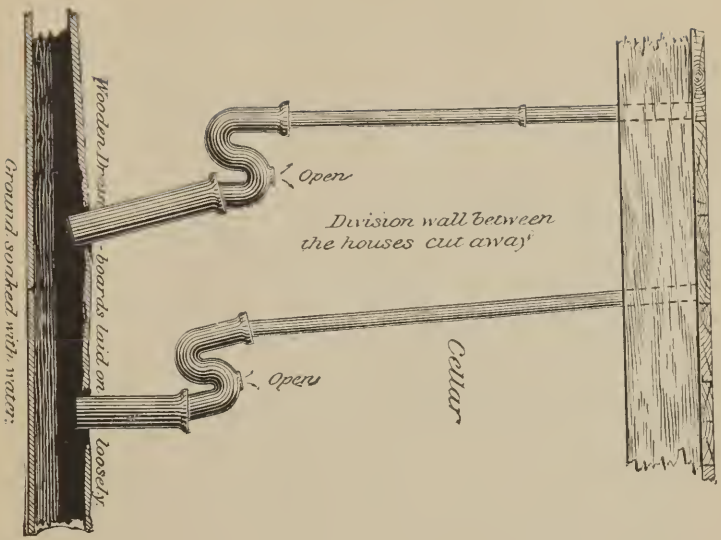
Ward 9. No. — Bridge court. Occupied by Italians. On second floor, a man, wife, her three brothers and three children occupy three rooms. A man, wife, and two children have two rooms. On the third floor a family comprising three men, a woman, and two children has a kitchen and two bedrooms. In the attic a man, wife, and baby occupy two rooms.

Ward 12. Quiet alley. Four houses inspected, in which a considerable proportion of the inmates were found drunk. Two privy apartments served for some eighteen families, and were in the vilest possible condition; the vault of one was full and overflowing on to the floor. Most of the sleeping-rooms small,

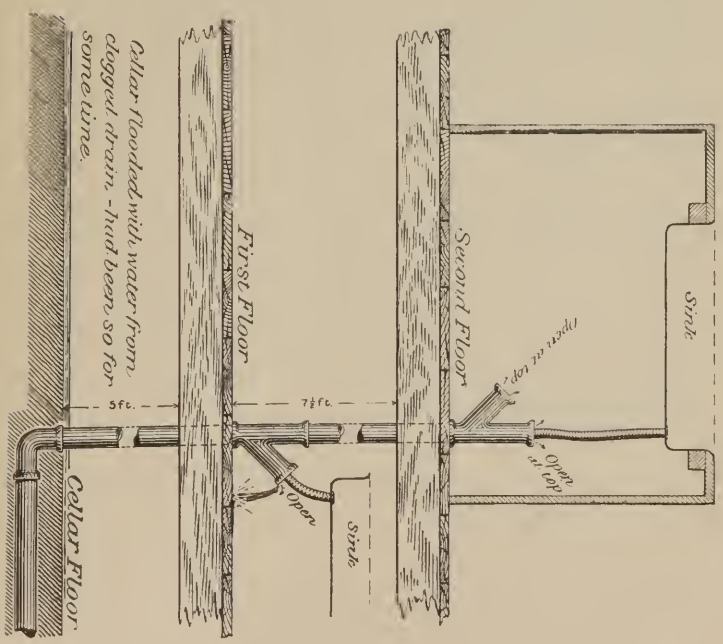
Rear Cellar, No - Commercial St.

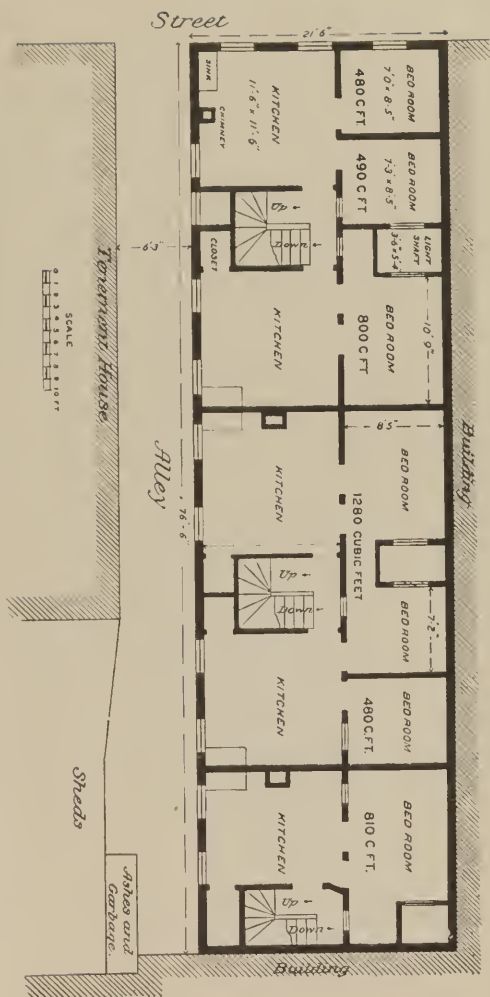


No. - and No. - Bolton St.



No. - Swan St.





ARRANGEMENT OF ROOMS IN A FOUR-STORY WOODEN TENEMENT-HOUSE ON
 FEDERAL-STREET PLACE (QUIET ALLEY), BOSTON. ARRANGED
 FOR FIVE FAMILIES ON A FLOOR.

overcrowded, and without windows to the outer air. Plumbing of the poorest description, and sinks not trapped; some of the sink outlets had become stopped up, and waste water was thrown out of windows on to a shed roof, which was also littered with garbage.

Ward 12. No. — Cove street. Six families. First-floor rooms very dirty. Sleeping-room of $5 \times 6 \times 8$ feet, nearly filled by the bed, and with no ventilation except by the door, used by lodgers. This and another room of the same description opened in common into the kitchen. Eight persons sleeping in three small connecting rooms on the fourth floor, the three rooms together equivalent to one fair-sized room.

Ward 13. No. — Bolton street. Six families. Only one sleeping-room afforded its occupants more than two hundred cubic feet of space to a person. Four sinks in the house, none of them trapped. Vertical main waste-pipe of iron, with trap at its foot in the cellar, but clean-out cap gone from the trap; sewer end of trap thrust into open length of pipe, and this in turn into wooden drain so rotted away that sewage within was plainly exposed to view. Same conditions found in the cellar of the adjoining house. Cellar fouled with excreta.

Ward 13. No. — C street. Rain-leader broken in cellar, and latter flooded after storms. Sink trapped, but trap rendered of no value by having sewer end merely thrust into open branch of main waste-pipe.

Ward 13. No. — Colony street. Two persons sleeping in small room in cellar, dark and practically unventilated.

STATISTICS OF DISEASE.

In connection with an attempt to improve, through the preliminary means of an investigation, the sanitary condition of the tenement-house districts, it is certainly well to look into the

real facts of the case as to the prevalence of certain diseases. Unfortunately, so far as published statistics are concerned, we cannot identify the tenement-house districts, but must in the main draw our own inferences from data presented for the city as a whole. It would be of great advantage on many accounts if here, as in London, England, the city were divided in the matter of statistics into certain suitably outlined sanitary districts of like distinguishing features.

The zymotic diseases are the ones commonly spoken of as preventable; and those chiefly prevailing in Boston of late years have been the group of diarrhœal diseases of which cholera infantum is the most prominent, diphtheria and croup, typhoid fever, and scarlet fever. These together have been accountable in the past ten years for four-fifths of all the deaths due to zymotic diseases.¹

It is to be remembered that the statistics of disease commonly published deal with deaths only, and give no information as to the cases of sickness not fatal, although these greatly outnumber the former, and should be taken into account in forming an opinion upon the prevalence of disease. For the three common diseases, diphtheria, scarlet fever, and typhoid fever, we have, however, data for the city of Boston which show for the five years, 1883-87, a total of 3,505 deaths, while the reported cases numbered 18,780, or more than five times as many. That the cases of sickness which are not often publicly reported, and which involve an immense loss of labor, great direct expense,

¹ 10 years, 1878-87:—

Total deaths, all causes	. . . . .	89,897
Total deaths, zymotics	. . . . .	21,280 .
Diarrhœal diseases	. . . . .	8,452
Diphtheria and croup	. . . . .	5,652
Typhoid fever	. . . . .	1,696
Scarlet fever	. . . . .	1,212

and untold misery, so largely outnumber the deaths, is a fact important to consider if we are to appreciate the evil of allowing preventable diseases to go unchecked.

The zymotic diseases are termed preventable because so largely dependent upon conditions within control. Consumption is not classed as preventable, and yet we must not lose sight of the fact that this disease, which in the past five years, for example, has carried off in this city very nearly three-quarters as many persons as all the zymotic diseases together, is largely promoted by dampness and by foul air, — the latter so characteristic of densely crowded tenement houses, — and has even been found, in certain famous experiments, to be infectious, and hence capable of transmission from one person to another, just as diphtheria and scarlet fever may be thus transmitted; in other words, that it is, to a greater or less extent, a preventable disease.

A short examination of published returns shows what is, I think, understood by most persons, — that it is very young children who suffer most from the preventable diseases. Looking at the figures for the past three years only, we find that of the total mortality from such diseases, very nearly two-thirds was of children under five years of age;¹ and yet children of that age constitute scarcely one-tenth of the total population of Boston.

¹ MORTALITY IN BOSTON, 1885-87.

Under 5 years.	Total deaths.	Zymotics.	Sundry causes.
1885	3,466	1,201	2,265
1886	3,186	1,079	2,107
1887	3,662	1,328	2,334
	<u>10,314</u>	<u>3,608</u>	<u>6,706</u>
All ages.			
1885	9,618	1,879	7,739
1886	9,268	1,644	7,624
1887	10,073	1,993	8,080
	<u>28,959</u>	<u>5,516</u>	<u>23,443</u>

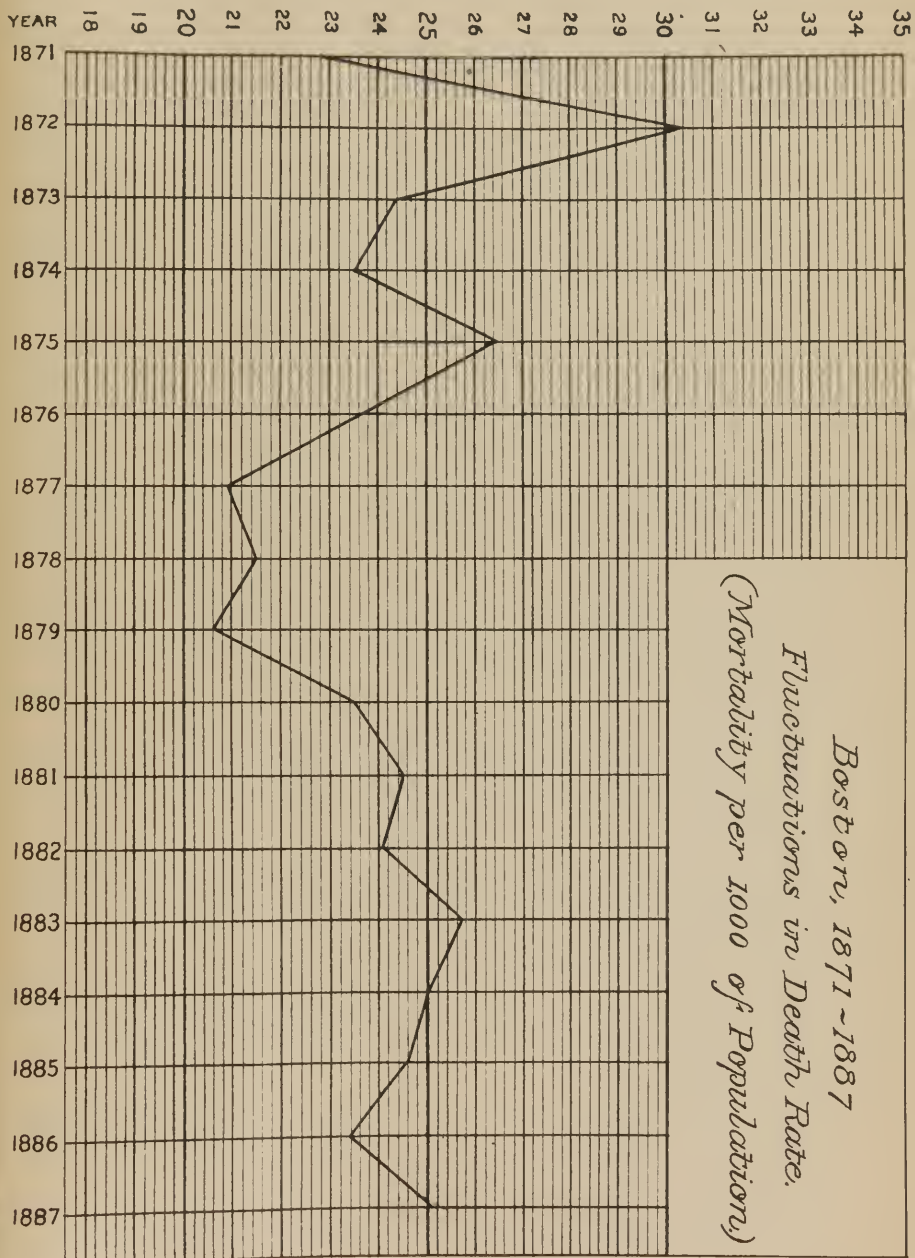
A study of the Board-of-Health returns for the past seventeen years shows the total death-rate of the city — that is to say, the annual number of deaths, from all causes, per thousand of population — to have ranged as high as above 30, and as low as between 20 and 21; and yet, on the whole, no material, permanent change is apparent, for either better or worse; and the rate clings to figures comparing unfavorably with those for numerous of the largest American cities.

If now we look to see what proportion of the total deaths has been due to zymotic diseases, we shall find that in a series of years it has ranged as high as about 35 per cent., and as low as somewhat under 18 per cent. It is more important to know that the higher rate was reached far back in 1872, and that since that time there has been an irregular, but on the whole a marked and well-maintained, decline. It is still further interesting to notice that while for the seven years, 1877–83, this decline in the zymotic rate appeared to have come substantially to a standstill, yet in 1884, which was the first year in the use of the Improved Sewerage System, the decline began afresh, and in the three years, 1884–86, there was a uniform and remarkable decline from 26.2 to 17.7 per cent. in the proportion of deaths from zymotic diseases.

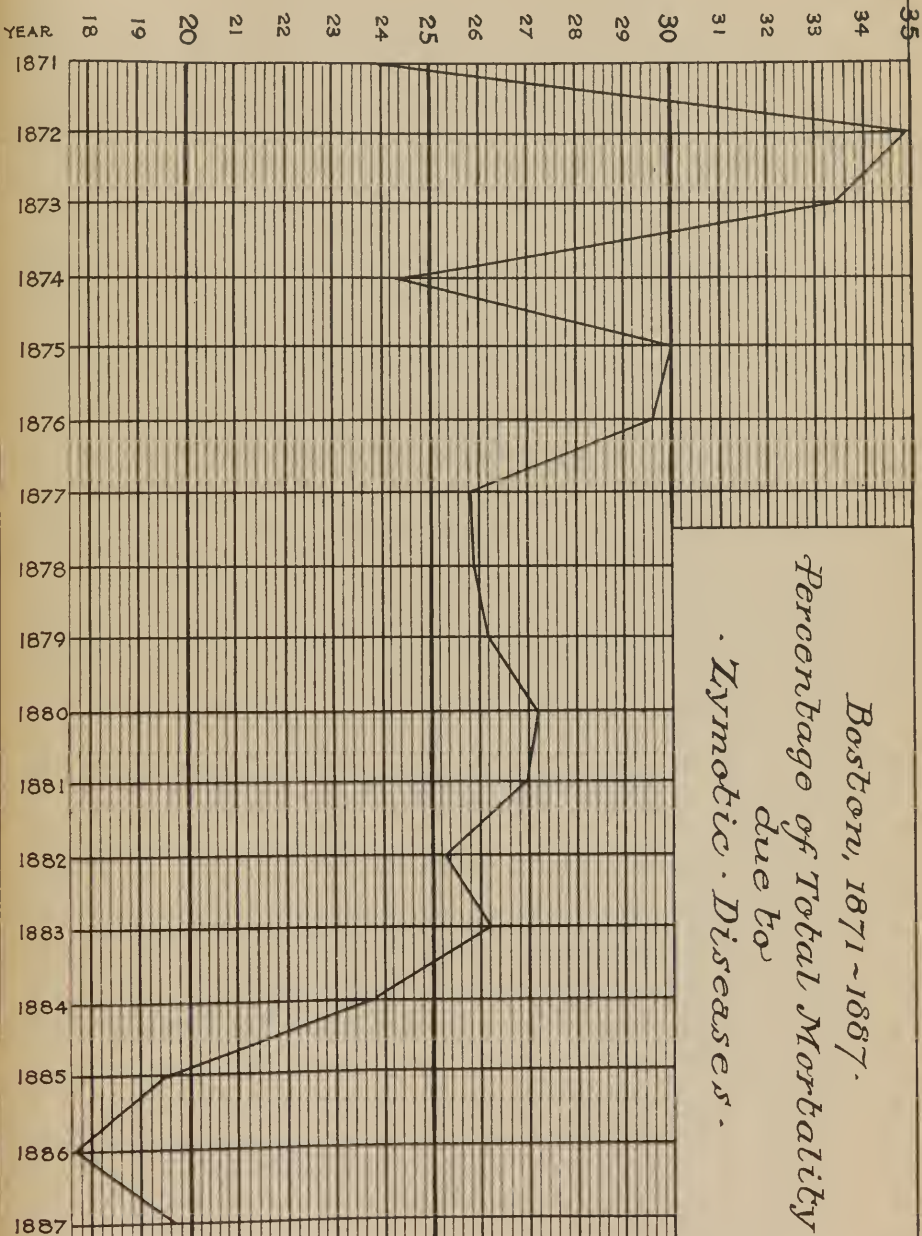
CONDITIONS ESSENTIAL TO IMPROVEMENT.

It is evident, then, that there has been made in this city a very encouraging advance in the prevention of a certain class of diseases; and this advance may fairly be ascribed to the improved sanitary conditions which have been established mainly through public action. There is no good reason why the advance which has been noted should not be pushed much farther yet. It is not to be expected, however, that an improvement

Boston, 1871-1887
Fluctuations in Death Rate.
(Mortality per 1000 of Population)



*Boston, 1871-1887.
Percentage of Total Mortality
due to
Zymotic Diseases.*



of this sort is to go forward constantly with great speed or without occasional set-backs. Injurious methods of tenement-house life, and defective systems for disposing of the dangerous wastes of a great city, which have existed for many years, cannot be overturned in a day. Certain things seem essential to our proper protection against the preventable or filth diseases. We must have the strict enforcement of reasonable sanitary precautions within and about the houses. We must have a well-designed, well-constructed, and well-maintained system of branch and main sewers, reënforced by an efficient system for the collection and removal of solid filth, garbage, and wastes from the streets and private premises, — these two systems together serving to cleanse the city of foul waste matter. And, finally, there must be a suitable disposal of the wastes collected.

At the present time all these conditions are fulfilled in part. The houses and premises of the citizens are expected to meet certain requirements, and are subject to supervision to some extent; but, as I have attempted to show elsewhere, this supervision is not sufficiently systematic or complete. We have a new and valuable system of main sewers for a part of the city, and connected with them a large proportion of good branch sewers; and yet there are very many branch sewers, especially in the tenement-house part of the city, which are unfit for their purpose. For the removal of solid filth collected above ground a system is employed which, while not perfect, ranks very high as compared with the methods in use in most large cities. And, finally, by the introduction of the Improved Sewerage System, the dangerous method of finally disposing of the sewage of the city formerly in use has been supplanted by one that is convenient and safe.

Each of the agencies which has been mentioned for maintain-

ing a good sanitary condition within the city is important, but it seems to me that at the present time none offers greater opportunity for advance than a close attention to the immediate surroundings and the interior of the houses themselves. There are few streets that are so likely to become dangerously littered or saturated with filth as are many of the yards and alleys, unless these are looked after sharply ; and although a sewer may become foul, yet it is mainly through faults lying within the house, in its drainage system, that the foul sewer air comes into dangerous proximity to human beings. Moreover, even if everything be right with streets, sewers, yards, and alleys, there are many objectionable and unsafe conditions which may exist for a long time within a house, unless some one be held responsible for their discovery and remedy.

The pipes of the house-drainage system become coated, and often give rise to just as foul emanations as come from a sewer ; and when, as in many tenement houses, there is unbroken communication, through the waste-pipes, between different tenements, there is an opportunity for the interchange of infection similar to that afforded by unbroken connection between house and sewer.

Then, too, through the surprising negligence and callousness of certain grades of tenants, what most people would consider intolerable nuisances are permitted to exist indefinitely. As examples of these, my inspectors reported : a dead cat found on a front-stair landing, appearing to have been there a long time ; a dead cat in a cellar, the carcass having nearly rotted away ; a bushel of decayed tomatoes in a cellar ; a pail of garbage far gone in decay, found under a sink ; apparently the same pail of garbage there nearly three months afterwards, the pail dropping to pieces. It is true that under any practicable system of house inspection more or less such instances as these would be

encountered ; nevertheless, I am confident that the total number of defects, especially those of a somewhat permanent character, would be greatly reduced.

In his report for 1885, the Commissioner of Health of Chicago, in which city a comprehensive system of tenement-house and factory inspection is in operation, says, "The character and importance of this work as the basis for a sound and permanent sanitary advance, and its performance, imperfect as it still is, has been so largely instrumental in steadily decreasing our death-rate, . . . that I propose to review at length the facts presented by the Registrar of Vital Statistics, and to point out the results which I believe may be justly attributed to this intimate sanitary supervision of the homes and places of labor of our citizens."

In New York city the law in force at the present time requires that the Board of Health shall cause a careful inspection to be made of every tenement and lodging house at least twice in each year ; and in case of an order having been issued, there is to be a reinspection within six weeks after the receipt of information that the order has been obeyed. It may fairly be inferred from the result of our labors, and I have endeavored to make it so appear in this report, that regular public inspection of at least the lower grade of tenement and lodging houses in this city also is desirable, and is, indeed, essential to much further improvement in the sanitary condition here.

WORK OF THE BOARD OF HEALTH.

This labor would naturally fall to the Board of Health to perform ; and it may be well at this point to consider briefly the work of that body. The Board consists of three members, appointed by the Mayor, and charged by law with the general

oversight of the public health, and with the enforcement of various statutes and ordinances designed for its preservation. To it come from citizens great numbers of complaints of defective sanitary conditions in the premises in which they live, or in the premises of their neighbors. To all these complaints — many of them trivial, and some malicious — attention must be given. For that purpose, and for carrying on the general work of the department, a force of inspectors — fifteen, I believe, in number — is employed. These are men of middle age; and as this department of city enterprise appears to be largely an exception to the usual interference of politics in city work, the inspectors have had opportunity by long experience to become thoroughly familiar with their duties, and with the sections of the city in which they labor. Not only are many formal written complaints, such as I have alluded to, received every day, but many others are made verbally to the inspectors as they patrol their districts; and, still further, these men are expected to employ their time in following up cases already on hand, and in maintaining a general supervision of their districts. The value of the labors thus performed cannot be doubted, and should be highly estimated. I was struck at once and throughout our own work with the general confidence and respect manifested by the people toward the Board-of-Health inspectors, — feelings which could have been aroused only by just and reasonable treatment. Incidentally, a great deal of house inspection is done by these men in the regular course of their work, and from time to time inspections of certain blocks or limited districts are, for special purposes, ordered by the Board.

It appears to be impracticable, however, for the present force of inspectors, in addition to their other duties, to attempt any systematic and thorough work of this character on a large

scale. As a rule, each inspector has in his charge two wards. Thus, one man has Wards 6 and 7, another, 8 and 9, and so on; and while one inspector is away on his annual vacation, his neighbor may have all four wards in hand. The inspector for Wards 6 and 7 has under his care a population of 30,000 or more of the most difficult people of the city to manage; the inspector for Wards 8 and 9 has, say, 25,000; and at times either one may have on his hands the demands of a population of over 50,000 persons. It is not to be expected that with so small a force proper care can be taken of the sanitary condition of such a population, living in the oldest and poorest houses, in the most crowded and worst-drained parts of the city. I am strongly of the belief, therefore, that the inspecting force of the Board of Health should be augmented for the express purpose of making semi-annual inspections of all tenement and lodging houses. This would involve a somewhat increased appropriation; but I can think of no way in which a moderate expenditure of money is likely to result in more general or genuine practical benefit to the community.

It will be readily understood that the position occupied by the Board of Health is a difficult one. It is exposed upon the one hand to the friendly but sometimes impatient criticism of those anxious to see improvements effected, the practical difficulties of which are not realized; and on the other hand to the bitter opposition of those who conceive their financial interests or personal rights to be invaded by its acts. The Board is, undoubtedly, sensitive to public opinion. It may and should occupy ground somewhat in the lead of that powerful force, but it cannot successfully work very far in advance. Not only, then, does it need men and money sufficient for its purposes, but it requires fully as much the coöperation and the moral support of the citizens; and, further, the laws, which are the

embodiment of enlightened public sentiment, should be such as to permit of reasonably prompt, effective, and thorough work.

THE TENEMENT-HOUSE PROBLEM IN NEW YORK.

The laws at present in force here are very valuable, and together with the common law, as interpreted by the courts, furnish the Board of Health with wide power. To some of the statute laws I have, in the course of this report, made reference, and suggestions have also been advanced of certain other provisions that might be made to advantage. Changes or additions of details can best be proposed by the Board itself, which, from experience, is in a position to see their need. More general provisions, and those involving important principles, may properly be proposed and discussed by others. The laws holding in New York and Boston relative to tenement and lodging houses are in numerous respects similar, and in some are identical, even in wording. The more serious aspects of tenement-house life in New York, however, the wider experience of a larger city, and the active private interest that has been there aroused, have led to more comprehensive alterations in, and additions to, the laws of the former city than have been made to those of Boston.

Public efforts in New York toward tenement-house reform date back some thirty years, to the time of the first legislative inquiry into the question. The public sentiment which thus found expression asserted itself in a more emphatic and successful manner a few years later, in the report of a council of the Citizens' Association. In 1867, a tenement-house law was passed, which for twenty years served as the basis for public efforts toward the improvement of tenement-house life. As might be supposed, this law met at first with severe opposition

in enforcement, was but imperfectly executed, and was inherently weak in numerous points. That it was, however, a step in the right direction, and in accord with the current of advanced public opinion, was fully indicated by the greatly enlarged and even radical powers granted to the Health Department by the "Tenement-House Act" of 1887. This act followed an investigation by a special legislative commission appointed in 1884; nevertheless, its passage appears to have been brought about mainly through the persistent and enthusiastic efforts of private individuals and associations that had a genuine interest in this important reform. That the labors of these thirty years in New York city have borne splendid fruit in the development of more healthful conditions of tenement-house life can easily be believed. The improvement is shown convincingly by the statistics of a steadily falling death-rate among young children, and might, indeed, be confidently assumed merely from a consideration of the vast progress which public supervision has brought about in the *structural design* of the tenement houses. The history of all these efforts in New York has been very clearly and concisely presented by the President of the Board of Health of that city, in his report of last December, upon the "Tenement-House Problem."

Some of the provisions of the New York laws are perhaps uncalled for here; regarding the principles involved in others, there may be difference of opinion. Others, again, I think, commend themselves for adoption in this city. Some of the more important provisions of those laws which do not, so far as I can judge, exist in our own laws, are as follows:—

(1.) Upon requisition of the Board of Health, at least fifteen officers and men to be detailed by the Board of Police specially for enforcement of laws relating to tenement and lodging houses.

(2.) A commission, consisting of the Mayor, one delegate

from the Department of Health, one from the Department of Public Works, one from the Department of Street-Cleaning, and one from the Bureau of Inspection of Buildings, to meet annually and prepare such recommendations as they deem for the public good, of improvements in the laws affecting tenement and lodging houses, these recommendations to be presented to the Governor, Senate, and Assembly; also recommendations to the Board of Health of changes in the execution of these laws.

(3.) Appointment of a statistician to prepare the statistics of the city Board for its use, and for transmission to the State Board of Health.

(4.) Authorization to appoint ten medical sanitary inspectors.

(5.) Establishment of a Tenement-House Fund, to be used solely for the enforcement of orders of the Board of Health in relation to tenement houses. All expenditures from the fund to be collected from the property upon which made, or from the owners, tenants, or occupiers of the property.

(6.) At least one water-closet required for every fifteen occupants of tenement and lodging houses. All plumbing and drainage work and plumbing fixtures to conform to the requirements of the Board of Health. The placing of filth, urine, or fecal matter in any other place in a tenement house than that provided for it, or storing it in an apartment so long as to create a nuisance, declared a misdemeanor on the part of the person so offending. No privy-vault or cesspool to be allowed in connection with a tenement house, except when unavoidable, and then by permit from the Board of Health only, to whose requirements as to location and construction it must also conform. No privy-vault to remain connected with a tenement house after Jan. 1, 1887, except in cases specially named in the law.

(7.) Every owner and every person having control of a tenement or lodging house required to file in the Department of Health his name and address, a description of the property by street number or otherwise, the number of apartments, the number of rooms in each apartment, the number of persons occupying each apartment, and the trades or occupations carried on therein. He must also immediately file notice of change in any of these matters.

Posting conspicuously upon a tenement house a copy of an order or notice, declared to be sufficient service, although a copy is also to be mailed when the owner or agent has registered as provided.

(8.) Semi-annual inspections of every tenement and lodging house to be caused to be made by the Board of Health, and re-inspections within six weeks after the receipt of information of the obeying of an order.

(9.) No building to be built for or converted to the purposes of a tenement or lodging house, and no existing tenement or lodging house to be enlarged, or its lot diminished, so that it shall occupy more than 65 per cent. of the lot, excepting corner lots and cases for which the Board of Health grants special permits.

(10.) Cellar floors of all tenement houses to be cemented and made water-tight before Jan. 1, 1887.

(11.) The Board of Health authorized, when it shall appear wise or necessary, to reduce the number of occupants in overcrowded houses or rooms until the inmates shall not exceed one to every six hundred cubic feet of air space in such houses or rooms.

In a tenement house containing more than eight families, and in which the owner does not reside, the Board of Health may require a resident janitor or other responsible person to have charge of the house.

(12.) A tenement house, within the meaning of the law, defined to be one occupied by three or more families.

The last-mentioned clause is deserving of special notice. In this city, it will be remembered, the tenement-house laws apply only to buildings occupied by *more* than three families, or by more than two families upon any floor above the second. In New York, however, the law reaches houses containing *only* three families, — a vast extension. In Chicago, as nearly as I can judge, the tenement-house law applies to all rented buildings.

The reasons which have led to the limitations here in force are, I presume, a desire not to harass people by unnecessary regulations, and a belief that the principal evils of tenement-house life would be reached in houses of four or more families. In this city there are so many small wooden houses, built long ago, now in use by tenants, that the proportion of tenants occupying houses of not more than three families is probably greater than in some other cities of more recent development. It appeared in our examinations that all the defects of overcrowding, drainage, and so on, that exist in the larger houses, are to be found with about equal frequency in those lying outside the limits of the tenement-house law; and although the evils and danger springing from these insanitary conditions are undoubtedly intensified in the larger houses, I see no good reason why the provisions of the tenement-house law should not in time be extended so as to insure to a much larger proportion of tenants the protection from landlords that is now sought to be afforded to some.

A single example may illustrate the desirability of this. At No. — — — — place, in the North End, we found a little wooden house, not larger in plan than a fair-sized room, measuring but 14×17 feet, occupied by a single family of seven persons. The house was in a disgraceful condition. The roof was leaky, and the cellar in a disgusting state as the result of a

defective drain and the use of the cellar in place of the water-closet, which had been broken to pieces by previous tenants, who had kept a sailors' lodging house. The agent had promised this family that when they moved in everything should be made right, but after they had become settled it was, "If you don't like it, go!"

Desiring to know whether or not the features peculiar to the New York laws, as above outlined, have proved of practical value to the authorities charged with their execution, I addressed a letter, a short time since, to Mr. James C. Bayles, President and Commissioner of the Health Department of the city of New York, making specific inquiries regarding the various provisions to which I have referred. The courteous answer of Mr. Bayles to these inquiries furnishes a fund of most valuable information relative to the practical working of those laws, and I quote *verbatim* his replies, which have the same numerical designations as the queries addressed to him.

1. "The law relative to the detailing of police-officers to serve as a sanitary company under command of the President of the Board of Health, was so amended in April, 1887, as to increase the detail from fifteen to forty-five officers of the police force to undertake the enforcement of the tenement and lodging house laws. The sanitary company now consists of a sergeant, roundsman, and forty-three patrolmen. One of the patrolmen is detailed to the service of the Chief Inspector of the Division of Food Inspection, to assist in milk raids and other enterprises of like character. The other forty-two are constantly engaged in work pertaining to the enforcement of the tenement and lodging house laws. The system works very well. In a manuscript report from the Chief Sanitary Inspector, who has immediate command of the lay inspectors and sanitary company of police, I find the following: 'I am every year more strongly

impressed with the value of the service of the sanitary police, and become firmer in my conviction that they are an indispensable auxiliary to the organization of the Health Department. I confidently predict that when the next annual report is submitted, it will satisfactorily demonstrate that citizens' complaints are promptly attended to, that nuisances are discovered and abated without unnecessary delay, and that the laws and provisions of the Sanitary Code are more strictly observed and better results secured by the present organization of utilizing the services of the lay inspectors and sanitary police than heretofore attained.' With this opinion I, in a great degree, concur."

2. "The Commission, consisting of the Mayor and one representative each from the Health Department, Department of Public Works, Department of Street-Cleaning, and the Bureau of Inspection of Buildings, might be a very useful body, but from its composition it is not likely to become so. I am the only member of that Commission having any knowledge of the tenement-house problem, or any official concern with the execution of the laws thereto relating. It was evident to me, therefore, that if the Commission at its first and, thus far, only meeting did anything of value, it devolved upon me to take the initiative. I therefore prepared for this Commission a very elaborate report, setting forth the history of tenement-house legislation in New York for a series of years, and the work of the Board in enforcing the laws relating to tenement and lodging houses. This report was adopted by the Commission as its report, and was transmitted to Albany for the information of the Legislature. It was subsequently printed by order of the Legislature.

"It will be necessary, in compliance with the terms of the law, that another meeting of this Commission shall be held some-

time after the fifteenth day of November. For that meeting I shall prepare certain specific recommendations for the Legislature in the shape of drafts of bills adding to or amending the existing laws in certain minor details. I mention these facts merely to show that unless some member of such a commission takes an active, personal, and intelligent interest in the tenement-house question, its deliberations are not likely to develop anything of value.

3. "The Tenement-House Commission has not appointed a statistician, and in view of the completeness of the information furnished by the Health Department, will probably find no need to do so.

4. "The provision of law to which you allude in this inquiry has been amended to read, that the Board of Health 'may appoint and commission such number of sanitary inspectors as the Board may deem needful, not exceeding forty. . . . But twenty of such inspectors shall be physicians of skill and practical professional experience in said city.' In the use of the medical inspectors we depart from the intent of the law under a general discretion given us to assign all officers of the Board to such service as may seem to us best. At the present time no medical inspectors are serving as sanitary inspectors. They have all been assigned to duty in the Division of Contagious Diseases, and all the work of sanitary inspection is now done by the lay inspectors and the police. We do not find that physicians make good sanitary inspectors. The work devolving upon them is largely of a kind for which their education gives them no especial qualifications; and as they are likely to regard it as 'unprofessional,' they do it reluctantly and in a perfunctory way. It is our experience that a physician should never be employed in any work not strictly in keeping with his own sense of professional dignity. I would strongly

recommend that in any legislation which may be considered in Massachusetts, the Board of Health be left to exercise its own discretion as to the proportion of physicians and laymen on its staff.

5. "The provisions of the law relative to the establishment of a tenement-house fund were never operative. The Board of Estimate and Apportionment declined to set aside a sum of money for this purpose, and we have never had it. Fortunately, it has become unnecessary. Under the operations of the law relative to vacation, enacted March 25, 1887, it is no longer necessary for the Board to do work and file a lien against unknown or absent owners to cover the cost of the same. We are now able to require the owner to do it, and this is much better and simpler than the way originally provided by law.

6. "The provisions of the law covered by this inquiry are, to a great extent, arbitrary and improper. Matters of this kind should be left largely to the discretion of the local health authorities. All mandatory requirements are apt to work injustice in special cases. I should urgently recommend in all legislation having this or similar objects in view, that local Boards of Health be empowered in their discretion to require the owner to make such and such improvements, and that in no case this discretion be taken away from them. Privy-vaults and cesspools have been abolished to such an extent that very few remain within the city limits. Whenever found, they are vigorously moved against, and no consideration can be presented to the Board which will induce it to rescind such an order. Sometimes, where no harm will result, extensions of time are granted, as in the case of property to be improved at a fixed date by the substitution of a different building for the one that is now upon it; but if this date is remote, the order abolishing vaults and cesspools is immediately and peremptorily

enforced. With the single exception as to the arbitrary fixing of the number of water-closets required for tenement houses, this portion of the law is admirable, and is enforced by this department.

7. "The requirement imposed upon owners of tenement and lodging houses to register their names and addresses with the Health Department has never worked very well, for the reason that no penalties for non-compliance were provided, and the Board could not enforce this order against unwilling owners. The registration in the case of lodging-house keepers is complete, for the reason that they are required to take out permits, and cannot get such permits without making their names and addresses a matter of record. The object of the law requiring the registration of the owners of tenement houses was to enable us to find persons responsible for nuisances, upon whom to serve orders; but the power to vacate for non-compliance with orders obviates the necessity for such record. When a house gets in such a condition that repairs are necessary, and the owner either cannot be found or fails to comply with orders, the Board issues a vacation order, and immediately the owner comes to the front with his hat in his hand to ask the pleasure of the Board. A vacation order never fails to find the person responsible for the condition of the premises. At the present time, therefore, we are not attempting to keep up any fuller directory of tenement-house owners than can be had by a voluntary registration. The posting of an order in a conspicuous place within or upon a tenement house is a sufficient service, even though we are unable to reach the owner by mail.

8. "Under the present law, there is a semi-annual inspection of every tenement house in the city twice in each year. It is but fair to state, however, that our compliance with this law is not perfunctory. There are a large number of tenement houses

known to be in bad condition which are inspected as often as once a week, another larger class inspected twice each month, and a still larger class inspected once each month. We have an accurate and constantly revised census of tenement houses which is the result of this semi-annual inspection.

"Reinspections after orders are issued are never delayed as long as the law permits; viz., six weeks. They are usually made within ten days. We hold our inspectors to very close responsibility in this matter of reinspection, and they are not allowed to neglect it and hold the papers indefinitely.

9. "The provisions of the statute covered by this inquiry are enforced in every case.

10. "In the exercise of their discretion the Commissioners believe that proof of leakage should be furnished before an order to make a cellar water-tight should be enforced. Whenever a wet cellar is found, this proof is obtained, and the order to make the floor water-tight is enforced.

11. "The heavy inflow of Italian immigration into New York has necessitated more stringent measures looking to the enforcement of the law relative to overcrowding. As the result of night inspections, the Board of Health issues every week a large number of orders reducing the population of tenement houses. In the case of families, we are usually lenient in enforcing an order relative to the cubic air space per occupant; but when overcrowding results, as is usually the case, from the taking of lodgers, such orders are enforced without consideration. This law works very well, and has tended to prevent the huddling together of large numbers of persons in rooms too small to give proper breathing-space.

"The Board of Health requires a janitor to be in charge of large tenements whenever their condition or the character of the occupants is such as to render it necessary.

12. "The definition of a tenement house as one occupied by three or more families is probably as good as any we can get. It, of course, includes all the large apartment houses; and in relation to these dwellings, many of which are very elegant, the provisions of the tenement-house law are, of course, impracticable of enforcement. For example, — to require the semi-annual whitewashing of the elegant frescoed ceilings and expensively papered walls of such apartment houses as the Hawthorne, Ariston, Lisbon, and similar structures, in which apartments rent for from two to six thousand dollars per year, would be grotesque. The Board holds its powers, as regards these buildings, in the sense of reserved power, and is able whenever necessity exists to enforce the tenement-house law against them.

"This covers all your specific inquiries, which are so comprehensive as to render almost unnecessary any information relative to tenement and lodging houses additional to that which is so fully set forth in my report to the Mayor. From this you will see what an immense improvement has been effected in the construction of tenement houses under the operations of the several laws defining our powers relative thereto.

"In addition to this, I have pleasure in sending you a copy of our code of plumbing regulations which are enforced in the case of all new buildings; and it gives me pleasure to say that the work which is now done in tenement houses is better than that found in the best class of private dwellings in the city.

"I also send you a copy of the City Record, giving a detailed report of the operations of the department for the quarter ending June 30. From this you will see the amount of work done by the Sanitary Police."¹

¹ QUARTER ENDING JUNE 30, 1888.

The following is a summary of the work performed by the Sanitary Police: —

RESPONSIBILITY OF LANDLORDS.

It is, of course, understood that the people with whom we have to deal, in this work, are not altogether an innocent, in-offensive, and easily imposed upon class, but that many of them are about as rough and undesirable tenants as can be imagined. I have heard of a house-owner not daring to plank his cellar-bottom, for fear the tenants would pull up the planks and use them for fire-wood. Nevertheless, so long as landlords choose to receive these people into their houses, they should themselves be held strictly responsible for the decent and healthful condition of the premises. Generally speaking, in those tenement houses in which the landlord himself resides and looks after affairs, the conditions found are far better than in houses managed by agents not regularly present, or the landlords of which live in other parts of the city or out of town. There are several men who are large owners of tenement-house property in the West End and North End, whose houses are sure to be found overcrowded with the lowest classes of our population, and to be in just as defective condition as it is possible for them to be without absolutely defying the laws and the Board of Health. It is safe to say that these men, and many

Number of inspections made	35,382
“ “ complaints made	3,515
The number of orders received, inspected, and reported upon was 12,094, of which number there have been returned to the Sanitary Superintendent, —	
Orders complied with	3,691
“ not complied with	5,272
Orders reinspected and found complied with or progressing and referred to Sanitary Inspectors for reinspection and report .	2,880
Held for reinspection	251
Number of scavenger permits collected and forwarded to the Sanitary Superintendent	729
Number of lodging houses inspected	458
“ “ tenement houses inspected	15,165
“ “ families in tenement houses inspected	106,961
“ “ water-closets ordered in lieu of privy-vaults	222

others like them, care absolutely nothing for the welfare of their tenants. They conduct tenement houses solely as investments from which they propose to squeeze every cent of profit that can be legally obtained.

Just what net return is yielded by tenement-house property it is evidently impossible to learn in an inquiry of this kind; but a partial inference may perhaps be drawn from the gross rentals, concerning which our reports permit of making, for some houses, a rough approximation. This has been done in a considerable number of cases by taking the total of rents paid by tenants in a house, and estimating the value of the property at a certain percentage above the assessors' figures. Calculations thus made for some forty tenement houses proper, show gross returns ranging mainly between 10 and 20 per cent. In about an equal number of houses of less than four families, the range was considerably higher, rising in several instances to above 20, and even above 30, per cent. In several of these cases the annual rental exceeds the assessed value of the buildings.

It would probably be fair to rate the returns from the lowest class of wooden tenement-houses proper in this city at from 15 to 20 per cent. gross; from first-class brick tenement houses, at from 10 to 12 per cent. gross; while first-class business property yields from 6 to 8 per cent. gross, and $4\frac{1}{2}$ or 5 per cent. net. Even at the high rate mentioned for low-grade houses, it is probable that they often fail to net their owners much over 6 per cent., on account of abuse of the property, repairs, and bad debts. Still there are many other cases in which it is fair to suppose that the repairs, grudgingly made, cannot seriously reduce the gross income obtained from the property. The occupants of the lowest class of houses are constantly shifting; but they are usually required to pay their rent in advance,

so that there is no loss on that account. It seems to me there should be no hesitation in requiring from these owners, as a class, improvements which can plainly be shown to be requisite to a fair sanitary condition, and which must really benefit the property.

OPEN SQUARES FOR THE TENEMENT-HOUSE DISTRICTS.

In addition to the more direct sanitary work to be undertaken through the medium of the Board of Health and the laws, valuable steps may also be taken toward counteracting the evils of crowded city life by establishing breathing-places here and there in the form of open squares. The city has already under way splendid schemes for parks, which will beautify its surface and be of great benefit to the people. These should be supplemented, it seems to me, by the clearing away of an occasional opening in the crowded tenement-house districts. These openings may be of small size, but should be close at hand to the poor people, to whom they would serve as a place of resort for women and children during the day, tempting them away from many wretched and unhealthy homes.

Two or three such squares might well be established in the North End, and I am confident they would constitute a wise and sound investment for the city. If, owing to movements of population and encroachments of business, the necessity for them should cease in particular localities, the land could then, if it were thought desirable, be sold. They should be located in the immediate vicinity of the most densely populated districts, and preferably in their midst, as their construction might then have additional value by requiring some of the worst houses to be demolished.

I am informed that a law has been passed authorizing the

establishment in New York city of small parks of precisely the character which I have described. In accordance with that law, it has been decided to take a whole block, in what is known as "Mulberry Bend," bounded by Mulberry, Park, Bayard, and Baxter streets, situated among the worst slums in the city. This block will furnish a park measuring 200×600 feet, in the construction of which there will be obliterated some of the most crowded and degraded tenement houses to be found in New York.

As to the value of such improvements, I cannot do better than to quote from a paper by Mr. Charles H. Latrobe, engineer in charge of the parks of Baltimore, upon the "Influence of Parks and Open Squares upon the Health of Cities and Towns : " —

"As General Superintendent and Engineer of the Public Parks, I can truthfully say from actual observation, that they yield the only relief to home-worn women and children and shop-worn men, when the working-day is done. From 5 P.M. until 10 P.M. they are thronged during the summer months. On the open lawns are tennis courts, base-ball grounds, and lacrosse fields for the young ; under the trees are mothers and children. Coteries of old men assemble year after year on the same benches under the same trees. It is difficult to close the public squares at night when the time comes, the people cling to them so tenaciously. Their appreciation of them, I think, is manifest in the fact that although often situated in the roughest parts of the city, they are so little injured by thoughtless or malicious people. Indeed, in some places the neighbors donate flower-beds to beautify them, and take the greatest interest in their condition."

Mr. Latrobe further says : "One error, I think, is likely to be made in the matter of parks ; viz., that too much money may

be spent in the suburban region and too little in the hearts of our cities. My opinion is that after the establishment of one or two large suburban parks for holiday resort and all-day picnics, all available resources should be expended in breaking into the densely crowded centres of population, by the establishment of attractive squares easily accessible to the worn parents and sickly children of the surrounding districts ; indeed, the suburban parks might wait on the urban squares, as these latter would cultivate a longing for the larger liberty of the parks."

OTHER PUBLIC IMPROVEMENTS.

As is well known, the North End is intersected in all directions by narrow streets, so called, many of them, such as Salutation, Tileston, Stillman, and Morton, for example, measuring but about six feet between curbs, nor more than from ten to fifteen feet between opposite building-fronts. From such streets sunlight is often almost completely excluded. The space for light and air for the houses afforded by those streets is scarcely one-half what the law now demands for the opening between front and rear houses built upon a single lot. And beside these passage-ways dignified by the name of streets, there are numberless side alleys in which similar conditions prevail, only sun and air must needs struggle still harder in order to gain admittance. It cannot be expected that the city is to be made over anew, even in the interests of sanitary reform ; but the widening of narrow streets, even if based upon no other plea than that of the demands of business or of travel, should be hailed with satisfaction as also giving more air and light to the houses, and probably necessitating the destruction of some that could well be spared.

The tearing down of old tenement houses is likely not to be



CANNY PLACE, NORTH END.

From a photograph taken at noon on a bright day. — Blocks of tenement houses fronting from either side upon an alley 7 feet wide.

undertaken except to satisfy the demands of business, or the purposes of public improvements, or requirements of repairs too severe to warrant keeping up the old property. It is rather difficult to draw the line at which a house should be condemned to destruction under ordinary circumstances on sanitary grounds, inasmuch as any building can with sufficient expenditure of money be put into comfortable condition. A building that is plainly unsafe as regards construction, or required improvements of which are refused, will be forbidden occupancy by the Department for the Inspection of Buildings or by the Board of Health, as the case may be. It would evidently be unjust for the Board of Health to insist upon unusual and excessive improvements simply in order to root out a particular building; yet few could object to a sufficiently high standard of requirements under the laws, and a sufficiently strict enforcement of those requirements, to result in the voluntary destruction of some of the rookeries which now remain in the city. Thus, few, I think, would regret the razing to the ground of the buildings to be found in "Tucker's Yard," off Joy street, and in some other places that might be mentioned.

The Superintendent of Sewers, in his annual report for 1887, has called attention plainly to the generally bad and often dangerous condition of the sewers in the very section in which our work has been conducted. So long as those districts are compelled to rely upon antiquated wooden sewers, entirely unsuited both in design and in grouping to present purposes, their condition as regards healthfulness must be unsatisfactory.

IMPROVED TENEMENT HOUSES.

While public measures for the improvement of the sanitary condition of the laboring classes are indispensable, the extent

to which they are conceived and enforced will be governed by the state of opinion and interest among that portion of the people having influence in such matters. The mere passing of laws and granting of money will not accomplish everything; and nothing can be more valuable in aiding to public success than the coöperation of private effort. To the honor of the city it may be said that such efforts have been, and are now being, freely put forth here. The work of supplying improved tenement houses for the poorer classes opens a wide and interesting field to consideration, and can only be touched upon in this report. The operations of the Boston Coöperative Building Company, which has a paid capital stock of over \$200,000, and conducts thirty-nine houses, accommodating some two hundred families, afford a conspicuous example of work of this kind upon a large scale. The Improved Dwellings' Association, with a paid capital of \$100,000, manages another noteworthy enterprise of like character. There are numerous similar undertakings conducted upon a more modest scale by individuals, which I will not mention in detail, but which are of the greatest value in elevating the condition of the tenement-house population of the city. These undertakings are managed, so far as I am aware, as business enterprises, it being expected to charge about the market rate for rents, but to keep the houses in as good repair as the receipts will warrant, consistently with a moderate net income. Such enterprises are not only a direct blessing to the tenants who are accommodated, but they are valuable object-lessons to show what may be done by fair and considerate treatment in maintaining discipline among tenants, and in reclaiming to a decent sanitary condition some of the worst parts of the city.

For the general advancement by private action of the sanitary conditions into which it has been my duty to inquire, I can see

no more sensible or probably efficient method than the consideration of the questions involved by permanent committees ; for example, one for each ward, which shall have a constant oversight upon their districts, and shall undertake to direct attention and effort to particular houses or localities, and to agitate and press for the improvement of those until successful.

CONCLUSIONS AND RECOMMENDATIONS.

It has been sought in this report to present fairly the conditions which were encountered in our examinations, as well as to state certain conclusions and recommendations which have naturally followed. It has, doubtless, been noticed that these recommendations have been in the direction of an increase in the scope of effort, and a consistent enlargement of the powers and resources of the Board of Health. The safety of the principle of investing wide powers in a small body of men for the purpose of protecting the public health has been abundantly proved, here and elsewhere, by years of experience ; and the question which, it seems to me, should now be considered is that of strengthening and extending a line of work which is directly connected with the health, and, therefore, with the happiness and prosperity, of the entire community.

The aim has been, not so much to formulate these recommendations in precise detail, as to indicate certain principles which it seems important to establish in the public supervision of tenement and lodging houses of low grade. As to how far these principles should be established directly by laws and ordinances, or by regulations and discretionary action of the Board of Health, it has not been attempted nicely to decide. It is evidently to be desired that the laws should, on the one hand, state as clearly and definitely as practicable the requirements in sani-

tary matters, which must be observed by citizens ; and that they should, on the other hand, define similarly the duties and powers of the Board of Health, which must rely mainly upon these laws in its efforts. The public superintendence which it is thus sought to exercise, must, however, in order to be effectual, be so largely a matter of detail, and properly depending upon experience and judgment, that an attempt to incorporate into the laws fixed regulations for all minor points would prove unsatisfactory in results. It appears to me, therefore, that in applying the principles of the laws there should be left to the Board of Health much range for the exercise of discretion ; while, at the same time, in any particular case that may arise, there should be no doubt as to what the responsibility and authority of the Board are in the premises.

The principal suggestions which have been made in this paper may now be summarized as follows, in the order in which they have appeared : —

Issuance, at the discretion of the Board of Health, of permits to owners or lessees of tenement and lodging houses, limiting the number of occupants, as an assistance in checking overcrowding.

Doing away to the fullest practicable extent with the employment of inner rooms, not communicating directly with the outer air, in existing tenement and lodging houses, and the adoption of efficient measures to prevent their introduction into new construction. Restrictions for the future regarding the proportion of a lot to be covered by a tenement or lodging house.

If cellars and basements are to be allowed to be occupied regularly as dwellings, then they should be required to be made water-tight ; but it is advised that the occupancy of cellars and basements for sleeping purposes should be prohibited.

More rigorous enforcement of the law against uncleanness.

Provision for the removal of privy-vaults from alleys and courts excepted in the present law on account of not having sewers.

Sink waste-pipes to be required to be individually trapped.

The establishing of such detailed regulations as may seem wise concerning house drainage and plumbing fixtures, and the general supervision of, and discretionary action regarding, the same to be undertaken by the Board of Health.

Inspecting force of the Board of Health to be increased for the purpose of semi-annual inspection of tenement and lodging houses.

Widening of the scope of the tenement-house law, so as to embrace houses of a smaller number of families than is specified in the present law.

Establishment of open squares in the midst of the tenement-house districts.

Widening of narrow streets where practicable.

Such severity in the laws and their enforcement as shall tend to do away with some of the most objectionable houses now in use.

Improvement of the sewerage in certain streets where it is now known to be bad.

These recommendations are not pretended to be all that might be made to advantage, but are rather those the necessity of which was forced upon attention as the result of our examinations. Still other measures which have commended themselves in the experience of New York, or possibly other cities, may prove themselves also worthy of adoption here. Again, it is not assumed that the results of this examination offer a key to the complete solution of the tenement-house problem as a whole. There are other sides to this problem besides that approached in a sanitary survey, and the latter alone has been dealt with

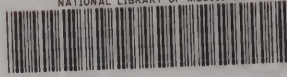
here. It may seem that the various conclusions drawn and recommendations made are broader than were warranted by partial and somewhat hasty inspections of limited districts ; yet I am of the opinion that very similar results would have been reached by me in any investigation, however extensive and elaborate.

In concluding, I desire to acknowledge the very valuable aid which I have received from Miss Margaret Greene and Mr. Arthur B. Ellis, members of the committee ; and to record my appreciation of the services of my assistants, Frank A. Smythe, George C. Whipple, Frank I. Capen, Samuel H. Mildram, William S. Johnson, and Alfred W. French.

Very respectfully,

DWIGHT PORTER.

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